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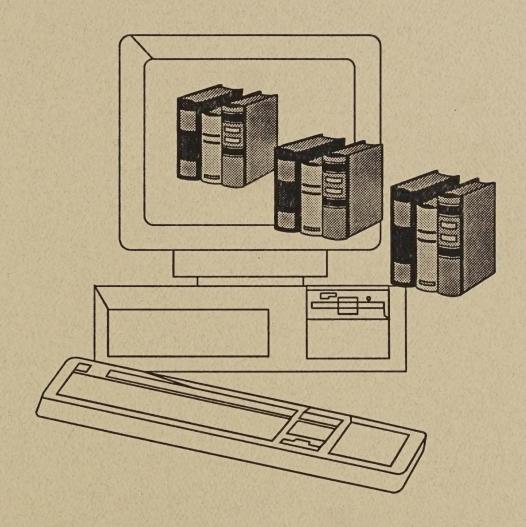


Forest Service

Forest Health Technology Enterprise Team

Davis, CA

# BIBLIOGRAPHY OF PESTICIDE APPLICATION TECHNOLOGY



The views, opinions, and/or findings in this report are those of the authors and should not be construed as an official U.S. Department of Agriculture position, unless so designated by other official documentation. The use of trade names in this report does not constitute an official endorsement or approval of the use of such commercial hardware or software. This report may not be cited for purposes of advertisement.

Pesticides used improperly can be injurious to human beings, animals, and plants. Follow the directions and heed all precautions on labels. Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides where there is danger of drift when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment, if specified on the label.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S Environmental Protection Agency, consult your local forest pathologist, county agriculture agent, or State extension specialist to be sure the intended use is still registered.



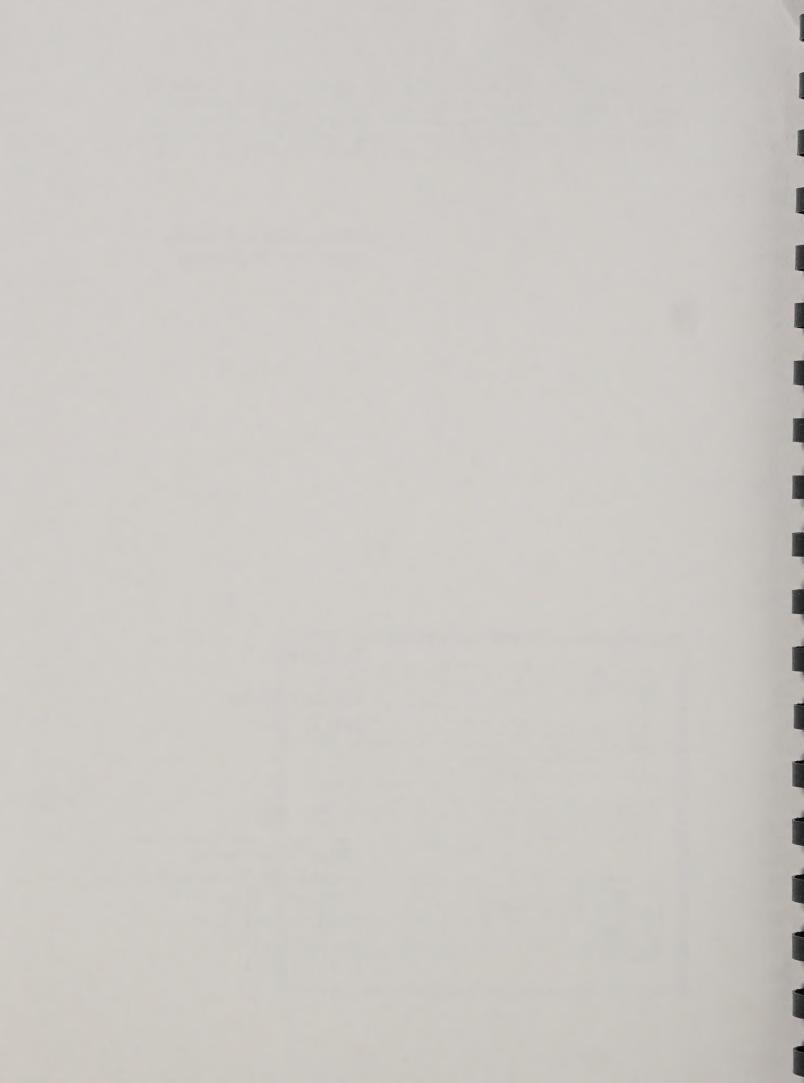
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Bibliography of Pesticide Application Technology

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## REPORT CATEGORIES FOR USDA FOREST SERVICE, FHTET-DAVIS LIBRARY CATALOGUING PROJECT

1. FPM (Davis) and MAG (Davis) Numbered Reports

Reports that have an FPM (Davis) or MAG (Davis) report number.

2. FPM (Davis) and MAG (Davis) Unnumbered Reports and Papers

FPM (Davis) and MAG (Davis) reports and papers that were prepared by FPM (Davis) and MAG (Davis) but were not assigned a report number.

3. MTDC Numbered Reports

Reports that have an MTDC report number.

4. MTDC Unnumbered Reports and Papers

MTDC reports and papers that were prepared by MTDC but were not assigned an MTDC report number.

5. Journal and Book publications by Forest Service Authors

Publications in peer reviewed journals and books by Forest Service authors.

6. ASAE Papers by Forest Service Authors

Papers presented at national meetings of American Society of Agricultural Engineers.

- 7. ASAE Papers by Non-Forest Service Authors
- 8. Magazine and Trade Journal Articles by Forest Service Authors

Publications in non-peer reviewed publications.

9. Papers and Abstracts by Forest Service Authors as listed in Proceedings and Abstracts

These may be peer or nonpeer reviewed papers. 10. FPM (Davis) and MTDC Contractor Reports and Papers

Contractor reports and papers

11. U.S. Army and U.S. Army Contractor reports and Papers

Reports and papers by U.S. Army cooperators and their contractors.

12. Region and Station Reports

USDA Forest Service reports.

13. Canadian Reports and Papers

Reports and papers from any Canadian province, agency or university.

14. Miscellaneous Reports and Papers

All reports and papers that do not fall within the above categories.

15. History

Pesticide application technology, spray behavior, forest pest control, aerial application, spray aircraft, other.

#### **PREFACE**

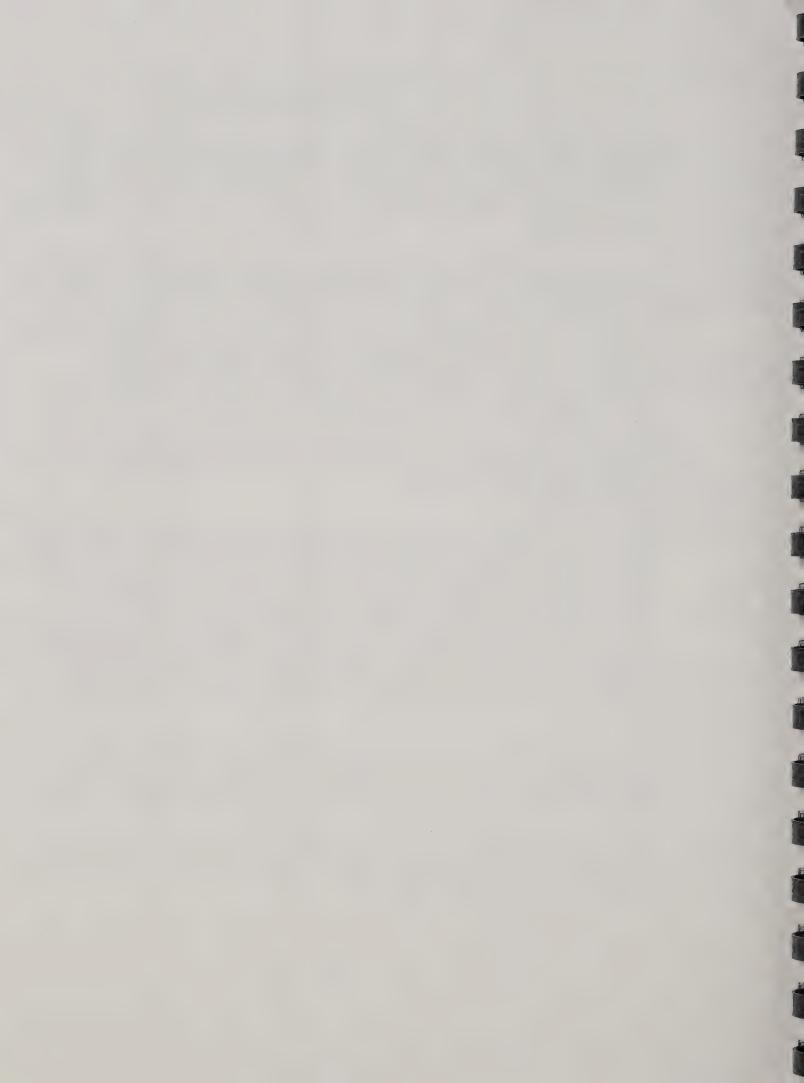
This bibliography represents a listing of 15 categories contained in the USDA Forest Service, Washington Office, FHTET-Davis, CA library. Criteria for listing is the presence of the citation pesticide application technology in the WO/FHTET-Davis library. FHTET is an acronym for Forest Health Technology Enterprise Team.

The WO/FHTET-Davis office has been the focal point for dissemination of information on pesticide aerial application technology since 1976. In pursuit of its technology development mission the staff produced and sponsored preparation of reports, publications, presentations, and articles on pesticide use technology, especially aerial application. The Davis office has a unique collection of reference material which, on a continuing basis, is being inventoried, catalogued, and indexed into a national database. Much of this material does not exist in other libraries and thus is not known, accessible, or retrievable. In time such reference material can be lost within the process of personnel transfers, staff reorganizations, and relocations. The integrity of this collection should be maintained.

In cooperation with USDA Forest Service, Information Systems and Technology Staff (FS INFO), Washington, DC, the WO/FHTET-Davis staff is cataloguing this collection and entering it into the FS INFO database. Publications dated 1990 to present are being entered into the database by the FS INFO staff. Publications prior to 1990 will be entered by the FHTET-Davis staff as time and funding allow. Indexed materials in the database follow national standards for bibliographic description, Anglo-American Cataloging Rules (AACR2) and authorized thesaurus, Commonwealth Agriculture Bureau (CAB) Thesaurus, for subject access.

The 15 categories for the USDA Forest Service, WO/FHTET-Davis library cataloging project are listed in the Table of Contents and on pages iv and v. A listing of abbreviations and acronyms is provided on pages 2 and 3.

This bibliography is not annotated. The authors recognize the great value of annotation, however, limitations imposed by budget restraints have constrained our goals of an annotated bibliography.



#### INTRODUCTION

This bibliography is a listing of reports, publications, and other papers contained in the USDA Forest Service, Washington Office, Forest Health Technology Enterprise Team (FHTET-Davis) (formerly WO/FPM (Davis)) library currently located at Davis, CA. Criteria for listing in this bibliography are as follows:

- 1. Reports, publications, and other papers on aerial and ground application of pesticides including pesticide application technology, and research, pilot, and operational control projects.
- 2. Reports, publications, and other papers that are physically present in the FHTET-Davis library.
- 3. Reports, publications, and other papers that contain historic, scientific, and engineering information and data that we believe is or will be of value to persons pursuing research, development, and field operations in planning, conducting, and evaluation of pesticide-use research and/or operational projects.

The citation format and guidelines used in this bibliography are those of the American Society of Agricultural Engineers.

The bibliography is set up as follows:

First Alphabetically by primary author.

Second By year - oldest first (i.e. 1969, then 1970, etc.).

Third By report number - oldest first (i.e. FPM 90-3, then

FPM 90-4, etc.)

#### ABBREVIATIONS AND ACRONYMS

AGDISP <u>Agricultural Dispersal</u> aerial spray model

AGLINE <u>Agricultural Line</u> Source Code

ASAE <u>American Society of Agricultural Engineers</u>

CDI <u>Continuum Dynamics, Inc.</u>

DPG U.S. Army <u>Dugway Proving Ground</u>, Utah

EMCOT Event Modeling for Complex Terrain

FIDM Forest Insect and Disease Management staff, now

called FPM

FPM USDA Forest Service, Washington Office staff,

Forest Pest Management

FHTET-Davis USDA Forest Service, Washington Office, Forest

Health Technology Enterprise Team located at

Davis, CA

FSCBG Forest Service-Cramer-Barry-Grim aerial spray

model

MAG (Davis) USDA Forest Service, Washington Office staff,

Forest Pest Management, Methods Application Group formerly located at Davis, CA. (In 1995 MAG was merged with FPM Davis, CA and Morgantown, WV groups to become the Forest Health Technology Enterprise Team (FHTET)

### ABBREVIATIONS AND ACRONYMS (Cont'd)

MEDC USDA Forest Service, Washington Office,

Missoula Equipment Development Center, or Equipment Development Center, Missoula, MT,

new name MTDC

MTDC USDA Forest Service, Washington Office,

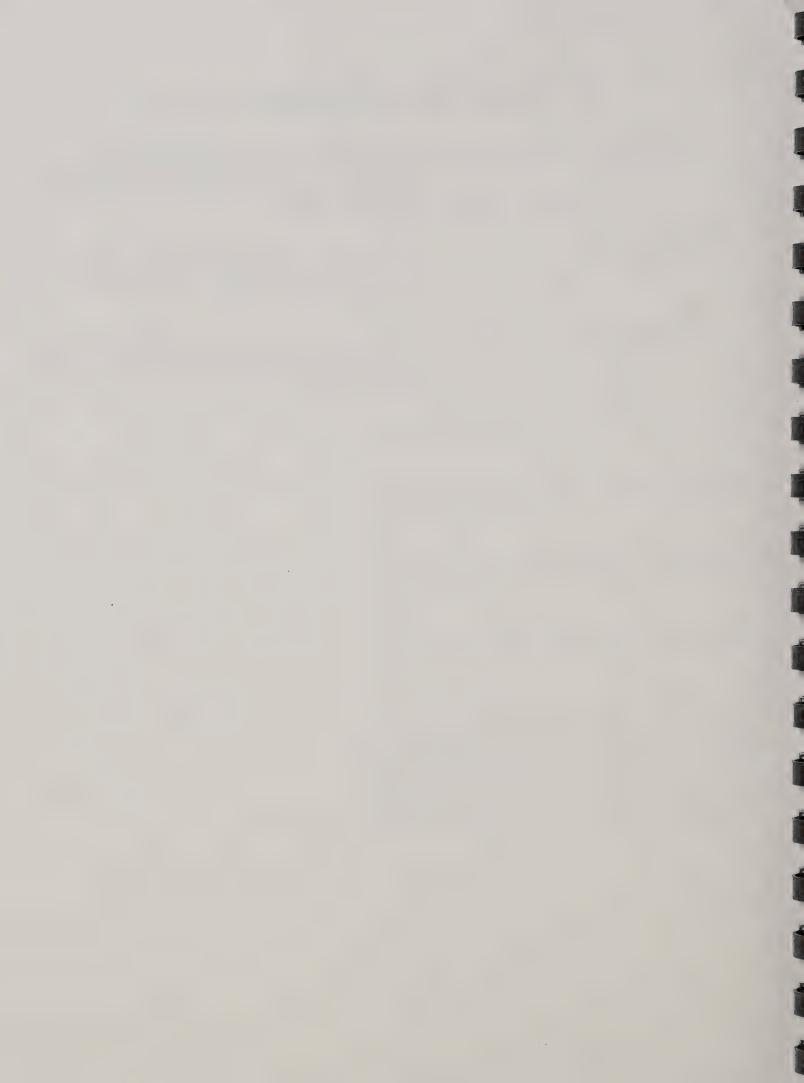
Missoula Technology Development Center

located at Missoula, MT.

WIND Winds in Non-Uniform Domains, a cooperative

field study conducted jointly by U.S. Army and

USDA Forest Service





## FPM (DAVIS) AND MAG (DAVIS) NUMBERED REPORTS

- Anonymous. 1982. An assessment of aerial application technology. FPM 82-3. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W., G.L. Whyte and T.H. Hofacker. 1978. Evaluation of the Marsh turbo thrush for forest spraying Phase 1 Spray characterization. Report No. 79-1. USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Barry, J.W., I. Millers and E.M. Richardson. 1980. Spray characterization trials for the 1979 Maine spruce budworm control program. Report No. 80-4. USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Barry, J.W., G.P. Markin, J.A.E. Knopf and J. Wong. 1983. Demonstration of the Marsh turbo thrush to deliver pesticides to coniferous forests Phase 2 Forest spraying. Report No. 79-2. USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Barry, J.W. 1984. Drop size: Drift and effectiveness of herbicide sprays. FPM 84-4. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1985. Drift predictions of three herbicide tank mixes. FPM 85-3. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W., J.E. Rafferty and R.B. Ekblad. 1987. Modeling for aerial spray buffer zone. FPM 87-4. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W., J. Warner and P. Skyler. 1988. Preliminary data report Davis aircraft spray characterization trials. FPM 88-6. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1990. National steering committees for aerial application of pesticides Report no. 1. FPM 90-3. USDA Forest Service, Forest Pest Management, Davis, CA.

- Barry, J.W. 1990. National steering committees for aerial application of pesticides Report no. 2. FPM 90-4. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1991. National steering committees for aerial application of pesticides Report no. 3. FPM 91-3. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1991. Summary of recommendations National steering committees for application of pesticides. FPM 91-4. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1991. <u>Second report</u> National spray model advisory committee. FPM 91-10. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1991. <u>Fourth report</u> National steering committee for management of seed, cone, and regeneration insects. FPM 91-11. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1991. <u>Fourth report</u> National steering committee for management of western defoliators. FPM 92-1. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1991. <u>Fourth report</u> National steering committee for management of gypsy moth and eastern defoliators. FPM 92-2. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1992. Critique of the national pesticide management training course February 18-March 1, 1991 Marana, Arizona. FPM 91-5. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1992. Study plan Environmental fate of *Bacillus thuringiensis* spray applied in mountain terrain 1992 phase. FPM 92-6. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1992. <u>Third report</u> National spray model advisory committee Notes of the Charlotte, NC meeting, June 23, 1992. FPM 92-10. USDA Forest Service, Forest Pest Management, Davis, CA.

- Barry, J.W. 1992. <u>Fifth report</u> National steering committee for management of western defoliators. FPM 93-1. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1992. <u>Fifth report</u> National steering committee for management of gypsy moth and eastern defoliators. FPM 93-2. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. and P. Skyler. 1992. <u>Notes</u> National pesticide coordinator's meeting Salt Lake City, Utah, September 29 October 2, 1992. FPM 93-3. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. and D.L. Parker. 1993. <u>Third report</u> National steering committee for management of vegetation on forest and range lands. FPM 93-6. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W., H. Thistle, B. Grim, J. Anhold and W. Whaley. 1993. Work plan *Bacillus thuringiensis* Drift/Dispersion and effects on non-target lepidoptera, Utah 1993 Phase III. FPM 93-8. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1993. <u>Fifth report</u> National steering committee for management of seed, cone, and regeneration insects. FPM 93-13. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1993. <u>Sixth report</u> National steering committee for management of western defoliators. FPM 93-14. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1993. <u>Sixth report</u> National steering committee for management of gypsy moth and eastern defoliators. FPM 93-15. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1993. <u>Fourth report</u> National spray model steering committee. FPM 93-16. USDA Forest Service, Forest Pest Management, Davis, CA.

- Barry, J.W. 1993. Supplement to sixth report National steering committee for management of gypsy moth and eastern defoliators USDA APHIS pesticide evaluation reports. FPM 94-3. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1994. <u>Fifth report</u> National spray model and application technology steering committee. FPM 94-15. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. and P.J. Skyler. 1994. FY 94 accomplishment report FPM/Davis office, pesticide application technology. FPM 94-16. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1994. <u>Seventh report</u> National steering committee for management of western defoliators. FPM 95-2. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W., M.E. Teske, and H.W. Thistle Jr. 1995. New aerial herbicide application technology. FPM 95-5. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1995. The USDA Forest Service pesticide environmental fate and application development program An overview. FPM 95-10. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. 1995. <u>Sixth Report</u> National steering committee for management of seed, cone, and regeneration insects. FPM 95-11. USDA Forest Service, Forest Health Protection, Davis, CA.
- Bergen, J.D. 1986. Preliminary canopy structure estimates for the forest site of the program WIND study. FPM 86-3. USDA Forest Service, Forest Pest Management, Davis, CA.
- Bergen, J., B. Hutchinson and W. Waite. 1987. Supplement to Preliminary canopy structure estimates for the forest site of the program WIND study. FPM 88-1. USDA Forest Service, Forest Pest Management, Davis, CA.

- Bjorklund, J.R., C.R. Bowman, and G.C. Dodd. 1988. User guide Forest Service aerial spray computer model FSCBG2. FPM 88-5. Prepared under U.S. Army Contract DAAD10-81-C-0001 (TR-87-164-01) by H.E. Cramer Company. USDA Forest Service, Forest Pest Management, Davis, CA.
- Boyle, D.G. 1989. Spray accountancy review A literature search Volumes I and II. FPM 89-3. Prepared under Purchase Order No. 40-91S8-9-0265 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Continuum Dynamics, Inc. 1995. CASPR (Computer assisted spray productivity routine) User manual. FPM 95-6. USDA Forest Service, Forest Pest Management, Davis, CA.
- Curbishley, T.B. and P.J. Skyler. 1989. User manual Forest Service aerial spray computer model FSCBG(PC) Revision 1. FPM 89-1. Prepared under Contract No. 54-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Curbishley, T.B. 1992. 1991 CASPR spray aircraft efficiency model validation study. FPM 92-8 (C.D.I. Technical Note No. 91-10). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Curbishley, T.B. 1995. FSCBG/D The FSCBG demonstration system user guide. FPM 95-14 (C.D.I. Technical Note 94-29). Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-4-0009 for USDA Forest Service, Forest Health Technology Enterprise Team, Davis Service Center, Davis, CA.
- Drummond, D.B., S.D. Hubbard and J.W. Barry. 1981. Evaluation of the spray nozzle type and configuration in the application of spore suspensions of the fusiform rust fungus to southern pines. MAG Report No. 81-2. USDA Forest Service, Forest Pest Management, Methods Application Group, Davis, CA.

- Dumbauld, R.K., C.R. Bowman and J.E. Rafferty. 1980. Optimum swath widths and application rates for selected aircraft and meteorological regimes. Report No. 80-5. Prepared under Contract No. 53-91S8-9-6260 by H.E. Cramer Company for USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Dumbauld, R.K., J.R. Bjorklund and S.F. Saterlie. 1980. Computer models for predicting aircraft spray dispersion and deposition above and within forest canopies: User's manual for the FSCBG computer program. Report No. 80-11. Prepared under Contract No. 53-91S8-9-6127 by H.E. Cramer Company for USDA Forest Service, Forest Pest Management, Methods Application Group, Davis, CA.
- Gay, B.P. and D.P. Segers. 1994. Specialized laboratory support (Task TA-31), droplet evaporation. FPM 94-9 (SRI-APC-93-597-6819.7). Prepared under Contract No. DAAD09-89-D-0005 by U.S. Army Dugway Proving Ground for USDA Forest Service, Missoula Technology Development Center. USDA Forest Service, Forest Pest Management, Davis, CA.
- Grim, B., J. Rafferty, G. Sutton and T. Clarke. 1992. Deposition of *Bacillus thuringiensis* into Gambel oak canopies. FPM 92-9. Prepared by U.S. Army Dugway Proving Ground in cooperation with USDA Forest Service, Forest Pest Management, Davis, CA.
- Heasley, J.E. 1990. Technical specification document for a visualization model that simulates spray plume dispersion over complex terrain. FPM 90-5. Prepared under P.O. 40-82FT-0-0644 by Resource Analysis Systems for USDA Forest Service, Methods Application Group, Ft. Collins, CO. and USDA Forest Service, Forest Pest Management, Davis, CA.
- Klein, W. and B. Boom. 1987. Forest site characterization. FPM 87-2. USDA Forest Service, Forest Pest Management, Davis, CA.
- Klein, W.H. 1990. Site characterization of gypsy moth treatment spray blocks in Utah, 1990. FPM 90-10. USDA Forest Service, Forest Pest Management, Davis, CA.

- MacNichol, A.Z. and M.E. Teske. 1993. FSCBG model comparisons with the C-130 spray trials. FPM 93-10 (CDI Technical Note No. 93-02). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- MacNichol, A.Z. and M.E. Teske. 1993. FSCBG model comparisons with the 1988 Davis spray characterization trials. FPM 93-12 (CDI Technical Note No. 93-08). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- MacNichol, A.Z. and M.E. Teske. 1994. FSCBG model comparisons with the 1991 Davis virus spray trials. FPM 94-2 (C.D.I. Technical Note No. 93-14). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- MacNichol, A.Z. 1994. C-47 aircraft spray deposition Part 1: A statistical interpretation. FPM 94-11 (C.D.I. Technical Note No. 94-02). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- MacNichol, A.Z. and M.E. Teske. 1994. FSCBG model comparisons 1974 Rennic creek spray trials. FPM 94-12 (C.D.I. Technical Note No. 94-07). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- MacNichol, A.Z. 1994. User manual for the spread factor database. FPM 94-14. Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- MacNichol, A.Z. 1995. C-47 aircraft spray deposition Part 2: FSCBG model prediction of deposition and biological response. FPM 95-8 (C.D.I. Technical Note No. 95-04). Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-4-00009 for USDA Forest Service, Forest Pest Management, Davis, CA.

- MacNichol, A.Z. and M.E.Teske. 1995. C-47 aircraft spray deposition. Part 3: FSCBG model prediction of deposition edge effects. FPM 95-16 (C.D.I. Technical Note No. 95-05). Prepared under Contract No. 53-0343-4-0009 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Health Technology Enterprise Team, Davis Service Center, Davis, CA.
- Mahrt, L. 1985. Potential transport of spray materials by slope winds: An interpretive literature study. FPM 85-4. Prepared under Purchase Order No. 40-91S8-5-1230 by Oregon State University for USDA Forest Service, Forest Pest Management, Davis, CA.
- Members, National Steering Committee for Management of Gypsy Moth and Eastern Defoliators. 1994. Tactical plan. FPM 94-5. USDA Forest Service, Forest Pest Management, Davis, CA 95616.
- Members, National Steering Committee for Management of Seed, Cone, and Regeneration Insects. 1994. Tactical plan. FPM 94-6. USDA Forest Service, Forest Pest Management, Davis, CA.
- Newton, W.E., R. Barnes and J.W. Barry. 1987. Almond tree foliage characterization. FPM 87-1. USDA Forest Service, Forest Pest Management, Davis, CA.
- Rafferty, J.E. and R.K. Dumbauld. 1980. Selection of spray operations criteria for the Withlacoochee state seed orchard project. Report No. 80-8. Prepared under Contract No. 53-01S8-9-6260 by H.E. Cramer Company for USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Rafferty, J.E., R.K. Dumbauld, H.W. Flake, Jr., J.W. Barry and J. Wong. 1982. Comparison of modeled and measured deposition for the Withlacoochee spray trials. FPM 83-1. Final report under Contract No. 53-91S8-9-6260 by H.E. Cramer Company for USDA Forest Service, Forest Pest Management, Davis, CA.

- Rafferty, J.E. 1984. Herbicide spray drift predictions using the Forest Service FSCBG forest spray model. FPM 84-1. Prepared under Purchase Order No. 40-91S8-3-1583 by H.E. Cramer Company for USDA Forest Service, Forest Pest Management, Davis, CA.
- Rafferty, J.E. and J.F. Bowers. 1990. Comparison of FSCBG2 and FSCBG3 aerial spray model predictions with field measurements. FPM 90-2. Prepared by U.S. Army, Dugway Proving Ground for USDA Forest Service, Forest Pest Management, Davis, CA.
- Sandquist, R., G. Berscheid, B. Hostetler, I. Ragenovich, J. Cota, C. Smith-Dixon, R. Beckwith, S. Howes, J. Barry and Abbott Laboratories. 1988. Technical evaluation plan Dipel 6L special project Pacific Northwest Region, 1988. FPM 88-7. USDA Forest Service, Forest Pest Management, Davis, CA.
- Shea, P.J. and J.W. Barry. 1992. Guidelines for field experiments and pilot projects Aerial application of pesticides. FPM 92-5. USDA Forest Service, Forest Pest Management, Davis, CA.
- Singer, J. 1982. Pesticide safety Guidelines for personnel protection. FPM 83-1. Prepared under Contract No. 53-91S8-9-6257 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Skyler, P., J.W. Barry and J. Warner. 1989. FSCBG computer model predictions of swath widths 1988 western spruce budworm project Pacific Northwest Region. FPM 89-4. USDA Forest Service, Forest Pest Management, Davis, CA.
- Skyler, P.J. and J.W. Barry. 1990. Evaluation of C-130 aircraft modular aerial spray system (MASS) for high volume (HV) application of herbicides Fuselage booms (Trials HV-1 and HV-2). FPM 90-6. USDA Forest Service, Forest Pest Management, Davis, CA.
- Skyler, P.J., J. Roberts, J. Weatherby and J.W. Barry. 1990. Aerial insecticide projects for suppression of western defoliators: 1970-1993 An annotated bibliography. FPM 90-11. USDA Forest Service, Forest Pest Management, Davis, CA.

- Skyler, P.J. and J.W. Barry. 1991. Final report Compendium of drop size spectra compiled from wind tunnel tests. FPM 90-9. USDA Forest Service, Forest Pest Management, Davis, CA.
- Skyler, P.J. and J.W. Barry. 1995. Bibliography of pesticide application technology. FPM 95-12. USDA Forest Service, Forest Health Technology Enterprise Team, Davis, CA.
- Smith, M. 1992. <u>Notes</u> Strategic planning session Pesticide Use Management and Coordination Group. FPM 93-4. Prepared by Science Applications International, McLean, VA. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Sommerville, D.R. and J.E. Matta. 1990. Spectroscopically derived spreadfactors for different *Bacillus thuringiensis* insecticidal formulations on paper impaction cards. FPM 90-8. Prepared by U.S. Army, Aberdeen Proving Ground for USDA Forest Service, Forest Pest Management, Davis, CA.
- Steinke, W.E. N.B. Akesson and R.M. Denning. 1990. Drop size spectra of Foray 48B produced by a Beecomist rotary atomizer. FPM 90-7. Prepared under Purchase Order No. 40-91S8-0-0594 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Steinke, W.E. and N.B. Akesson. 1990. Atomization characterization of TM biocontrol-1 and gypchek blank tank mixes (Draft). FPM 91-6. Prepared under P.O. No. 40-91S8-1-0141 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Steinke, W.E. and H.R. Silva. 1992. Analysis of the USDA Forest Service 1988 aircraft spray characterization trials. FPM 93-5. Prepared by University of California, Davis for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1989. AGDISP comparisons with four field deposition studies. FPM 89-5. Prepared under Purchase Order No. 40-91S8-7-0721 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.

- Teske, M. 1990. AGDISP Evaluation and validation, training, user group, code enhancements September 20, 1989 A meeting to discuss technology transfer and evaluation of AGDISP. FPM 90-1. Prepared under Contract No. 53-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1990. FSCBG modeling comparisons with the Heather seed orchard deposition data. FPM 90-5. Prepared under Contract No. 53-04H1-9-0510 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. and T.B. Curbishley. 1990. Forest Service aerial spray computer model FSCBG 4.0 user manual. FPM 91-1 (C.D.I. Report No. 90-06). Prepared under Contract No. 53-04H1-9-0510 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1990. An FSCBG primer (Draft). FPM 91-7. Prepared under Contract No. 53-04H1-9-0510 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E., T.B. Curbishley and P.J. Skyler. 1990. FSCBG one-on-one instruction manual. FPM 91-8 (C.D.I. Report No. 90-07). Prepared under Contract No. 53-04H1-9-0510 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1992. ASCAS (automatic spot counting and sizing) program version 4.0 User documentation. FPM 92-3 (C.D.I. Technical Note 91-14). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1992. FSCBG technical manual. FPM 92-4 (C.D.I. Report No. 91-01). Prepared under Contract No. 53-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.

- Teske, M.E. 1992. Correlation of the USDA Forest Service drop size distribution data base. FPM 92-7 (C.D.I. Technical Note No. 92-12). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1992. Meteorological data reduction, METDAT version 1.0 user manual. FPM 92-11 (C.D.I. Technical Note 91-15). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1992. Spread factor regression, SPREAD version 2.0 user manual. FPM 92-12 (C.D.I. Technical Note 92-03). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1992. A working paper on net radiation index. FPM 92-13 (C.D.I. Technical Note 92-10). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1992. FSCBG model input sensitivity study. FPM 92-14 (C.D.I. Technical Note No. 92-17). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1993. The performance of FSCBG in downwind drift predictions. FPM 93-9 (CDI Technical Note No. 92-11). Prepared under Contract No. 53-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. and A.J. Bilanin. 1993. Drop size scaling analysis of non-newtonian fluids. FPM 93-11 (CDI Technical Note No. 93-06). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.

- Teske, M.E. and T. Curbishley. 1993. Forest Service aerial spray computer model FSCBG 4.2 user manual extension. FPM 93-17 (CDI Technical Note 93-05). Prepared under Contract No. 53-04H1-9-0510 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E., T.B. Curbishley, and C-M. G. Lam. 1994. An examination of the nonwater evaporation algorithm in FSCBG. FPM 95-1 (C.D.I. Technical Note 94-06). Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1994. Five years of FSCBG development A statement of progress. FPM 95-4 (C.D.I. Technical Memorandum No. 94-27). Prepared under Contract No. 53-0343-4-00009 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1995. EMCOT meteorological data, 1993 Utah gypsy moth eradication program. FPM 95-3. Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-1-00153 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. and A.E. Kaufman. 1995. Field measurements of helicopter rotor wash in hover and forward flight. FPM 95-7 (C.D.I. Technical Note No. 94-15). Prepared under Contract No. 53-0343-4-00009 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1995. FSCBG/RT Real-time model subroutines for spray cloud prediction. FPM 95-9 (C.D.I. Technical Note 94-20). Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-4-00009 for USDA Forest Service, Forest Health Technology Enterprise Team, Davis Service Center, Davis, CA.

- Teske, M.E. and A.Z. MacNichol. 1995. Effect of upwind-downwind aircraft vortex decay on ground deposition. FPM 95-13 (C.D.I. Technical Note 95-02). Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-4-00009 for USDA Forest Service, Forest Health Technology Enterprise Team, Davis Service Center, Davis, CA.
- Teske, M.E. 1995. *Bacillus thuringiensis* drift deposits on foliage and physical samplers A summary of the Utah drift studies 1991-1993. FPM 95-18 (C.D.I. Technical Memo 95-11). Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-1-00153 for USDA Forest Service, Forest Health Technology Enterprise Team, Davis Service Center, Davis, CA.
- Teske, M.E., T. Curbishley, and A.Z. MacNichol. 1995. FSCBG version 4.35 one-on-one training notes. FPM 95-19. Prepared under Contract No. 53-0343-4-00009 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Health Technology Enterprise Team, Davis, CA.
- Teske, M.E. 1995. Combine A software program which generates multiple flight line results from a single flight line. FPM 95-20. Prepared under Contract No. 53-0343-1-00153 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Health Technology Enterprise Team, Davis, CA.
- Thistle, H. 1994. Missoula Technology and Development Center Annual report, FY 93 and FY 94 accomplishments, Forest Pest Management program. Appendix to FPM 94-16. USDA Forest Service, Forest Pest Management, Davis, CA.
- Thomas, D.F. and M. Rutty. 1994. <u>Fourth report</u> National steering committee for management of vegetation on forest and range ecosystems. FPM 94-17. USDA Forest Service, Forest Pest Management, Washington, DC.
- Weeks, J.A., H.R. Blacksten and S.D. Coffey. 1982. Recommended development plan for an aerial spray planning and analysis system. FPM 82-2. Prepared under Contract No. 53-91S8-0-6406 by Ketron, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.

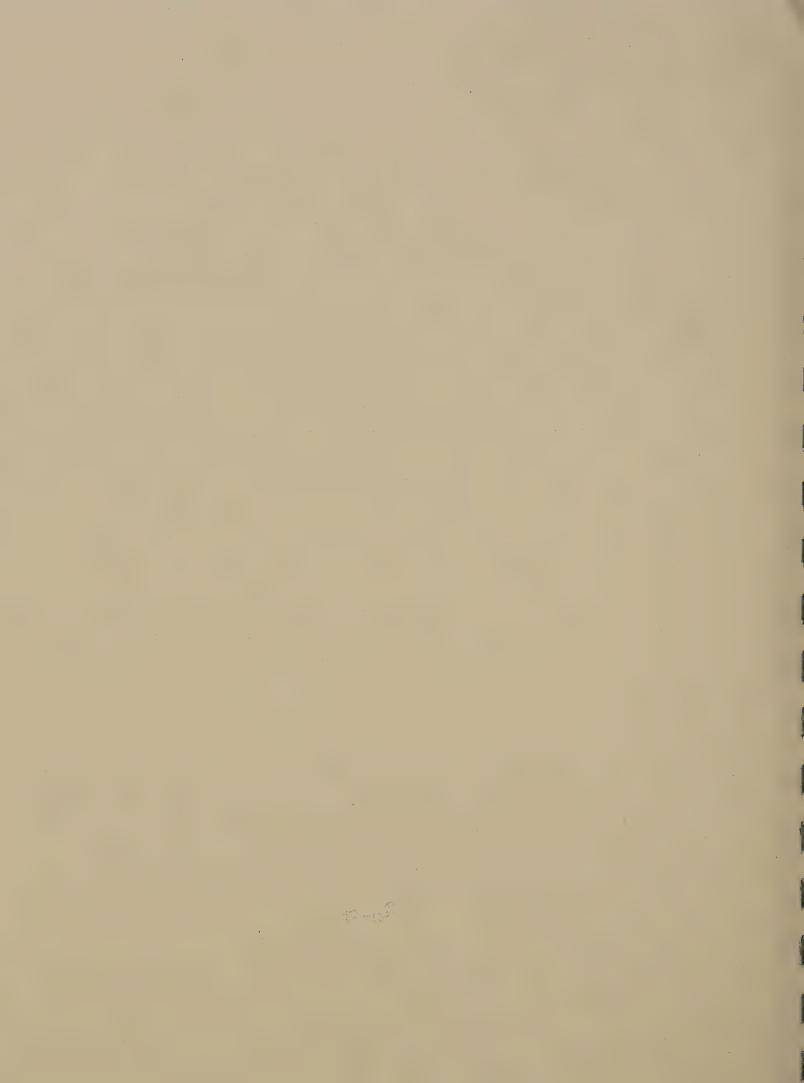
- Whyte, L., J.W. Barry and R. Young. 1977. Comparison of stain measurements on spray deposit cards by the Quantimet 720 image analyzer. Report No. 77-1. USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Wong, J. 1980. An analytical approach for defining optimum sample size for spray deposit assessment. MAG Report 80-7. USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1984. Drop size spectra for applications of Thuricide with Micronair and Unimizer atomizers. FPM 84-2. USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1984. Drop size spectra for application of Thuricide 32LV with a Beecomist atomizer. FPM 84-3. Prepared under Purchase Order No. 40-91S8-4-1129 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1985. Atomization of herbicide simulants with hollow cone and raindrop nozzles. FPM 85-1. Prepared under Purchase Order Nos. 40-91S8-4-1348 and 40-91S8-4-1130 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1985. Effects of Nalco-trol on atomization. FPM 85-2. Prepared under Purchase Order No. 40-91S8-4-1323 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E. and R.E. Cowden. 1985. Drop size spectra of rotary atomizers with *Bacillus thuringiensis* tankmixes. FPM 86-1. Prepared under Purchase Order Nos. 40-91S8-5-0917, 40-91S8-5-0975 and 40-91S8-5-1252 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.

- Yates, W.E. and R.E. Cowden. 1985. Drop size spectra of Dipel 8L and Thuricide 48LV atomized with a Micronair. FPM 86-2. Prepared under Purchase Order No. 40-91S8-5-0673 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E. and R.E. Cowden. 1986. Drop size spectra for Beecomist, Micronair, and an 8006 flat fan nozzle with Dipel 8L and Thuricide 48LV. FPM 86-4. Prepared under Purchase Order Nos. 40-91S8-5-0828 and 40-91S8-5-0827 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E. and R.E. Cowden. 1986. Drop size spectra Micronair AU5000 atomizer and hollow cone nozzles with special tank mix. FPM 86-5. Prepared under Purchase Order No. 40-91S8-0825 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E. and R.E. Cowden. 1987. Data report of wind tunnel tests D8-45 nozzle atomizing glycerin and water at air velocities 50 and 60 MPH. FPM 87-3. Prepared under Purchase Order No. 40-91S8-6-0779 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E. and R.E. Cowden. 1987. Data report of wind tunnel tests Characterization of selected tank mixes and nozzles for drops less than 34 micron diameter. FPM 87-5. Prepared under Purchase Order Nos. 40-91S8-6-0856 and 40-91S8-6-0712 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.
- Yates, W.E. and W.E. Steinke. 1987. Data report of wind tunnel tests Characterization of Beecomist atomizing three tank mixes of Dipel 6L. FPM 88-2. Prepared under Purchase Order No. 40-91S8-7-1179 by University of California (Davis) for USDA Forest Service, Forest Pest Management, Davis, CA.

- Young, R.W., R.C. Luebbe and J.W. Barry. 1977. ASCAS Data management system for assessment of aerial spray deposits. Report No. 77-2. USDA Forest Service, Methods Application Group, Forest Insect and Disease Management, Davis, CA.
- Zalom, F., B. Hennigan, J. Connell, G. Kirfman, J. Conley, C. Kitayana, H. Thistle, and J. Barry. Study plan Hennigan orchard study 1994 Evaluation of *Bacillus thuringiensis* to control peach twig borer. FPM 94-4. USDA Forest Service, Forest Pest Management, Davis, CA.

)	

FPM (DAVIS) AND MAG (DAVIS) UNNUMBERED REPORTS AND PAPERS



# FPM (DAVIS) AND MAG (DAVIS) UNNUMBERED REPORTS AND PAPERS

- Akesson, N.B. and J.W. Barry (Workshop Chairmen). 1978. Proceedings Plant protection and pesticide accountancy workshop, forestry spray projects. Sponsored by American Society of Agricultural Engineers Committees PM-41 and PM-55. USDA Forest Service, Methods Application Group, Davis, CA.
- Anonymous. 1981. Field crew instructions for deposit card sampling. USDA Forest Service, Methods Application Group, Davis, CA.
- Barry, J.W. Undated. Deposition of chemical and biological agents in conifers. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. and L. Whitcombe. 1976. Rate of spread Dylox 4 and Orthene 75S droplets on white Kromekote cards. USDA Forest Service, Methods Application Group, Davis, CA.
- Barry, J.W., W.M. Ciesla, R. Ford, R. Luebbe, L. Whitcombe and R.W. Young. 1976. Data report Spray deposit Maine 1976 operational project for control of the eastern spruce budworm comparing effectiveness of Sevin 4 oil 3/4 and 1 pound per acre. USDA Forest Service, Forest Insect and Disease Management, Methods Application Group, Davis, CA. and USDA Forest Service, Northeastern Area, Broomall, PA.
- Barry, J.W., W.M. Ciesla, R. Ford, R. Luebbe, L. Whitcombe and R.W. Young. 1976. Data report Spray deposit Maine 1976 operational project for control of the eastern spruce budworm comparing effectiveness of Sevin 4 oil 3/4 and 1 pound per acre (Data version number 2). USDA Forest Service, Forest Insect and Disease Management, Methods Application Group, Davis, CA. and USDA Forest Service, Northeastern Area, Broomall, PA.

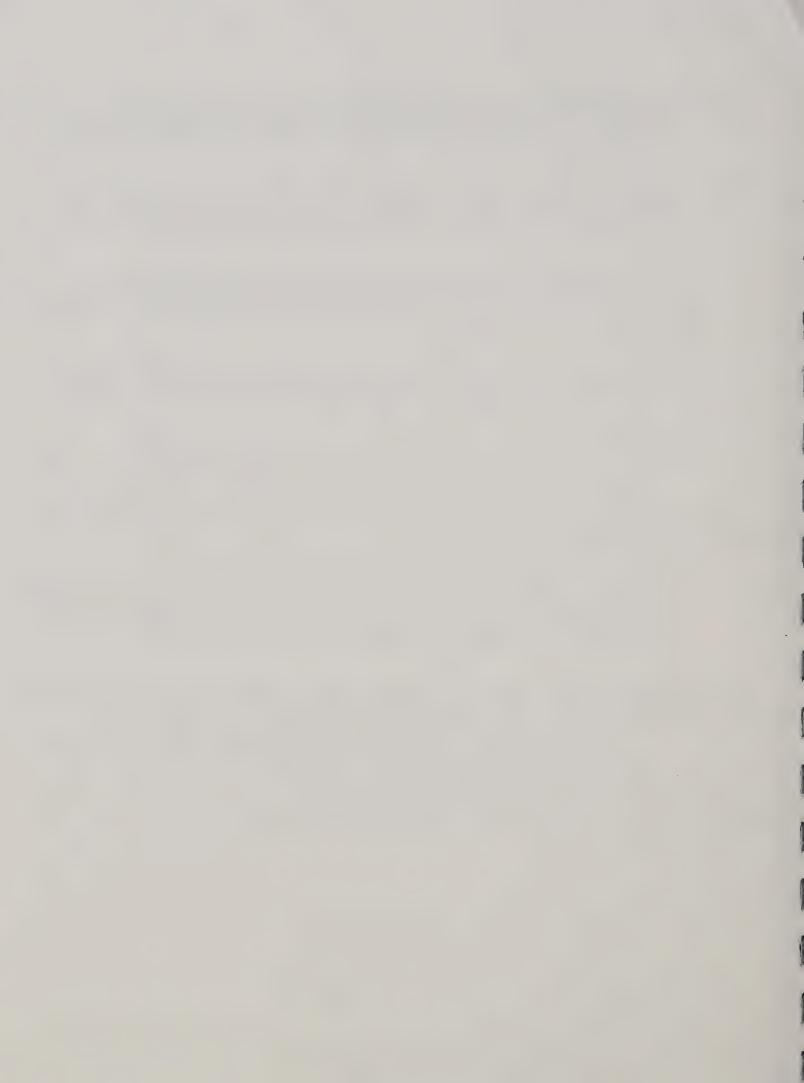
- Barry, J.W., W.M. Ciesla, R. Luebbe, L. Whitcombe and R.W. Young. 1976.

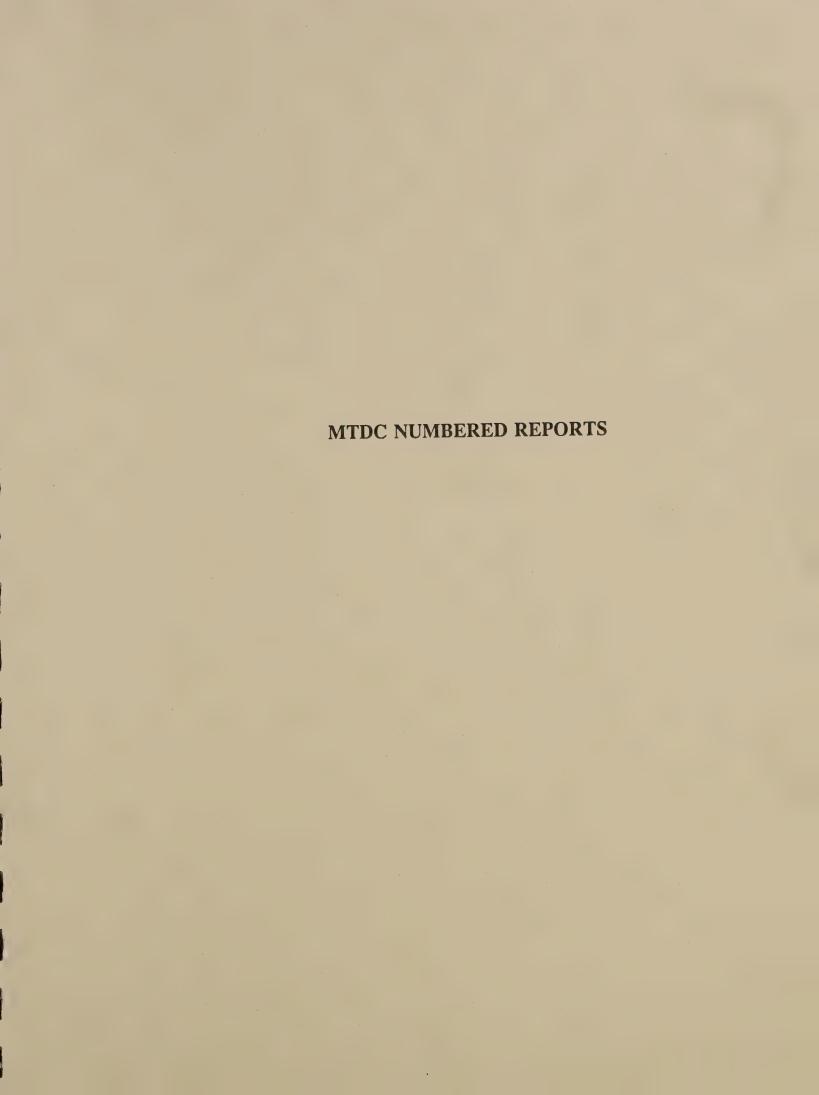
  Data report Spray deposit summary Northern Region, 1976 pilot project to evaluate Dylox and Orthene for controlling western spruce budworm. USDA Forest Service, Forest Insect and Disease Management, Methods Application Group, Davis, CA.
- Barry, J.W. 1977. Aircraft in forest pest control United States. Presented at *Short Course Aerial Application of Pesticides*. Cranfield Institute of Technology, College of Aeronautics. Bedford, England.
- Barry, J. 1986. Program WIND A forestry perspective. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. and R.B. Ekblad. 1989. Design of deposition studies during Program WIND. Presented at 19th conference on agriculture and forest meteorology and the ninth conference on biometeorology and aerobiology. Charleston, SC.
- Barry, J.W., R.B. Ekblad, M.E. Teske and P.J. Skyler. 1990. Predictive models for aerial delivery of pesticides. Presented at *National research council*, associate committee on agricultural and forestry aviation, symposium and trade show, industries and future needs. Winnipeg, Manitoba, Canada.
- Barry, J.W., R.B. Ekblad, M.E. Teske and P.J. Skyler. 1990. Computer models for aerial delivery of pesticides. Presented at *National gypsy moth review*. Ottawa, Canada.
- Barry, J.W. 1991. Study plan Off-site movement of *Bacillus thuringiensis* spray applied in complex forested terrain. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W. and M.E. Teske. 1992. Predicting and observing fate of sprays released over forests. Presented at XIX international congress of entomology, session 14S-5, the fate of chemicals in the environment. Beijing, China.
- Barry, J.W. and M.E. Teske. 1993. Aerial application computer simulations and US experiences. Presented at weedworks '93 workshop on forestry weed control, New Zealand Forest Research Institute. Rotorua, New Zealand.

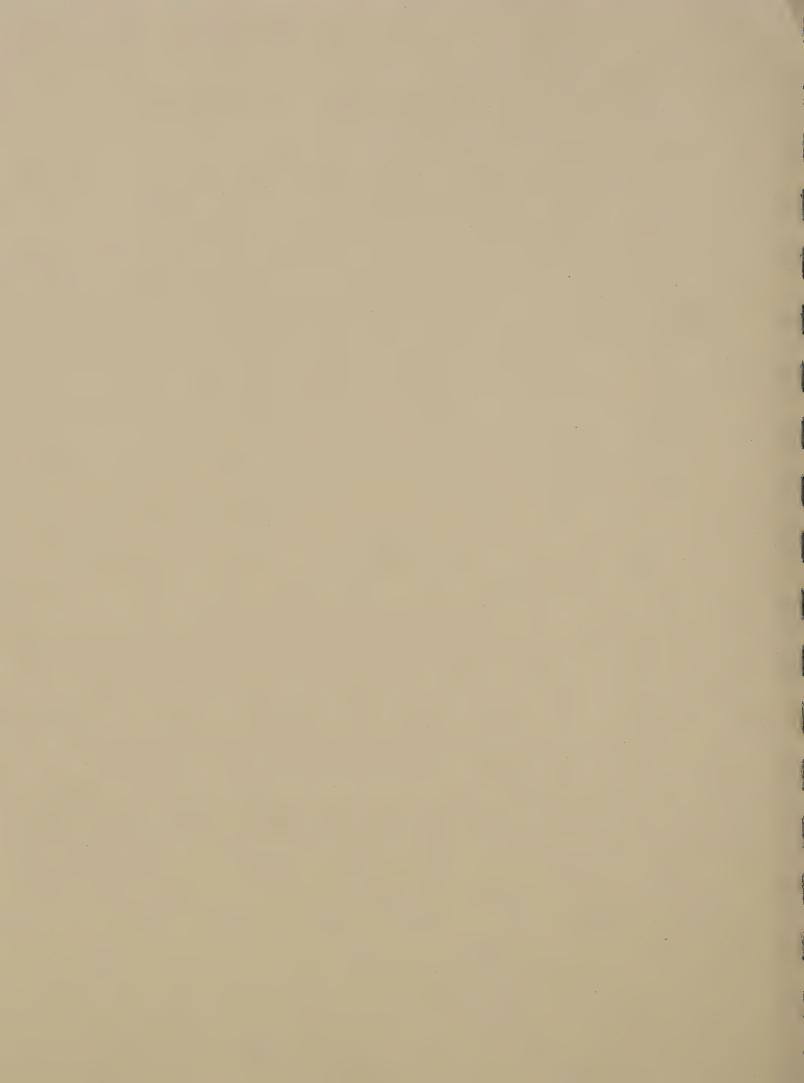
- Barry, J., B. Cibulsky, B. Grim, and M. Quilter. 1993. Study plan Detection, quantification, and persistence of *Bacillus thuringiensis* in mountain soil Phase II. USDA Forest Service, Forest Pest Management, Davis, CA.
- Barry, J.W., P.J. Skyler, M.E. Teske, H.W. Thistle, and M. Quilter. 1994. Bacillus thuringiensis study summary - Drift, canopy penetration, and soil persistence. Presented at 1994 annual gypsy moth review. Portland, OR.
- Barry, J.W. 1995. The USDA Forest Service pesticide environmental fate and application development program An overview. Presented at the 1995 national meeting of the American mosquito control association, aerosol cloud dynamics symposium. Portland, OR.
- Barry, J.W., M.E. Teske, and H.W. Thistle Jr. 1995. New aerial herbicide application technology. Paper presented at the 16th annual forest vegetation management conference. Sacramento, CA.
- Bentson, K.P., R.E. Sandquist, L.B. Hawley and J.W. Barry. 1993. Esfenvalerate spray deposition from aerial applications in a douglas-fir seed orchard. Unpublished draft. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory, Corvallis, OR.
- Ciesla, W.M. 1977. Spray deposit data plots, 1976 spruce budworm control project, R-6. USDA Forest Service, Methods Application Group, Davis, CA.
- Dumbauld, R.K., J.E. Rafferty, and J.R. Bjorklund. 1977. Prediction of spray behavior above and within a forest canopy. TR-77-308-01. Prepared by H.E. Cramer Company, Inc. for USDA Forest Service, Pacific N.W. Forest and Range Experiment Station, Portland, OR. USDA Forest Service, Forest Insect and Disease Management, Methods Application Group, Davis, CA.
- National Steering Committee for Aerial Application of Pesticides Western Defoliators. 1988. Report. USDA Forest Service, Forest Pest Management, Davis, CA.

- National Steering Committee for Aerial Application of Pesticides Seed and Cone Insects. 1989. Second annual report. USDA Forest Service, Forest Pest Management, Davis, CA.
- National Aerial Spray Model Advisory Committee. 1990. Notes of the Atlanta, GA meeting, September 11-12, 1990. USDA Forest Service, Forest Pest Management, Davis, CA.
- National Steering Committee for Application of Pesticides Vegetation Management. 1990. Second report. USDA Forest Service, Forest Pest Management, Davis, CA.
- National Steering Committee for Application of Pesticides Western defoliators. 1990. Second report. Forest Service, Forest Pest Management, Davis, CA.
- National Steering Committee for Application of Pesticides Gypsy Moth and Other Eastern Defoliators. 1990. Second report. USDA Forest Service, Forest Pest Management, Davis, CA.
- National Steering Committee Management of Seed and Cone Insects. 1990. Third annual report - A report of the Portland, Oregon Meeting - June 12-14. USDA Forest Service, Forest Pest Management, Davis, CA.
- National Steering Committee for Application of Pesticides Western Defoliators. 1991. Third report. USDA Forest Service, Forest Pest Management, Davis, CA.
- National Steering Committee for Application of Pesticides Gypsy Moth and Other Eastern Defoliators. 1991. Third report. USDA Forest Service, Forest Pest Management, Davis, CA.
- Richardson, B., H. Thistle, J. Ray, and J. Barry. 1995. Aerial application simulation models: The next generation. Poster paper presented at the second international conference on forest vegetation management. Rotorua, New Zealand.

- Skyler, P.J. (ed.). 1993. Short subjects and timely tips for pesticide users. Issues 93-1 through 93-5. USDA Forest Service, Forest Pest Management, Davis, CA.
- Skyler, P.J. (ed.). 1994. Short subjects and timely tips for pesticide users. Issues 94-1 through 94-9. USDA Forest Service, Forest Pest Management, Davis, CA.
- Skyler, P.J. (ed.). 1995. Short subjects and timely tips for pesticide users. Issues 95-1 through 95-8. USDA Forest Service, Forest Health Technology Enterprise Team, Davis, CA.
- Smith, R.A. and J.W. Barry. 1995. Soil persistence of *Bacillus thuringiensis* following aerial application. Paper presented at the *sixth annual gypsy moth research meeting*. Annapolis, MD.
- Teske, M.E., A.E. Kaufman, C.W. George, B.S. Grim, and J.W. Barry. 1995. Field measurements of helicopter rotor wash in hover and forward flight. Paper presented at the *american helicopter society aeromechanics specialist conference*. Fairfield Co., CT.
- USDA Forest Service. 1976. Proceedings spray deposit assessment workshop. Sponsored by U.S. Forest Service, FIDM-Methods Application Group; USDA Expanded Douglas-Fir Tussock Moth Program and USDA Expanded Gypsy Moth Program. Davis, CA, 16-18 March.
- USDA Forest Service. 1994. Informal notes of a coordination meeting held on October 16, 1994 at the USDA Forest Service, Missoula Technology Development Center, to discuss FSCBG contract, cooperation with New Zealand Forest Research Institute, and technology transfer. USDA Forest Service, Forest Pest Management, Davis, CA.







## MTDC NUMBERED REPORTS

- Allwine, K.J., X. Bian, C.D. Whiteman. 1995. VALDRIFT 1.0 A valley atmospheric dispersion model with deposition. 9534-2844-MTDC. Prepared by Pacific Northwest Laboratory (operated for the U.S. Department of Energy by Battelle Memorial Institute) under Contract DE-AC06-76RLO 1830 for the USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Anonymous. 1972. Nitrogen-pressurized spray system for C-47 airplanes. Equipment Development and Test Report No. 3400/5200-1. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Anonymous. 1974. Crossbow tree marking system for trees up to 90-feet tall. 2400-5200. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Anonymous. 1977. Treetop marking system. 7724-2307. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Anonymous. 1992. Rangeland technology equipment council, 1992 annual report. 9222-2842 MTDC. USDA Forest Service, Technology & Development Center, Missoula, MT.
- Banaugh, R. 1979. A summary of analytic expressions for droplet evaporation Special report. 7934-2806. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Banaugh, R. 1984. A method for comparing cost and productivity of aerial spray delivery. 8434-2807. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Dennison, R.S. and J.B. Wedding. 1984. Determination of evaporation rates of pesticide droplets Final report. 8434-2801. Prepared under Contract No. 53-0343-8-105 by Colorado State University and Aerosol Science Laboratory for USDA Forest Service, Equipment Development Center, Missoula, MT.

- Dumbauld, R.K. and J.E. Rafferty. 1977. Field manual for characterizing spray from small aircraft. 7734-2601. Prepared under Contract No. 26-3694 by H.E. Cramer Company for USDA Forest Service, Equipment Development Center, Missoula, MT. and USDA Forest Service, Methods Application Group, Davis, CA.
- Dumbauld, R.K. 1978. Development of field procedures for estimating mass density on spray deposit cards Special report. 7834-2802 (TR-78-312-01). Prepared under Contract No. 26-3843 by H.E. Cramer Company for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R. and F. Burbank. 1973. Application of "dry-liquids" to insecticide dissemination. ED&T 2034 (PNW 73-101). USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R.B. and J.G. Tietz. 1975. Experimental blends of dry liquids Project record. 7534-2217. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R.B., G. Miller and T.H. Flavell. 1977. Meteorological data supplement 1976 spruce budworm pilot test, Helena National Forest Project record. 7734-2213. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R.B. 1977. Meteorology and pesticide application Special report. 7734-2810. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R. 1977. Criteria and standards for drift sampling forest pesticide spray Project record. 7752-2218. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R., J.W. Barry and R. Banaugh. 1979. Deliverable dose index: An approximate method for comparing effectiveness of pesticide droplet sizes Special report. 7934-2803. USDA Forest Service, Equipment Development Center, Missoula, MT.

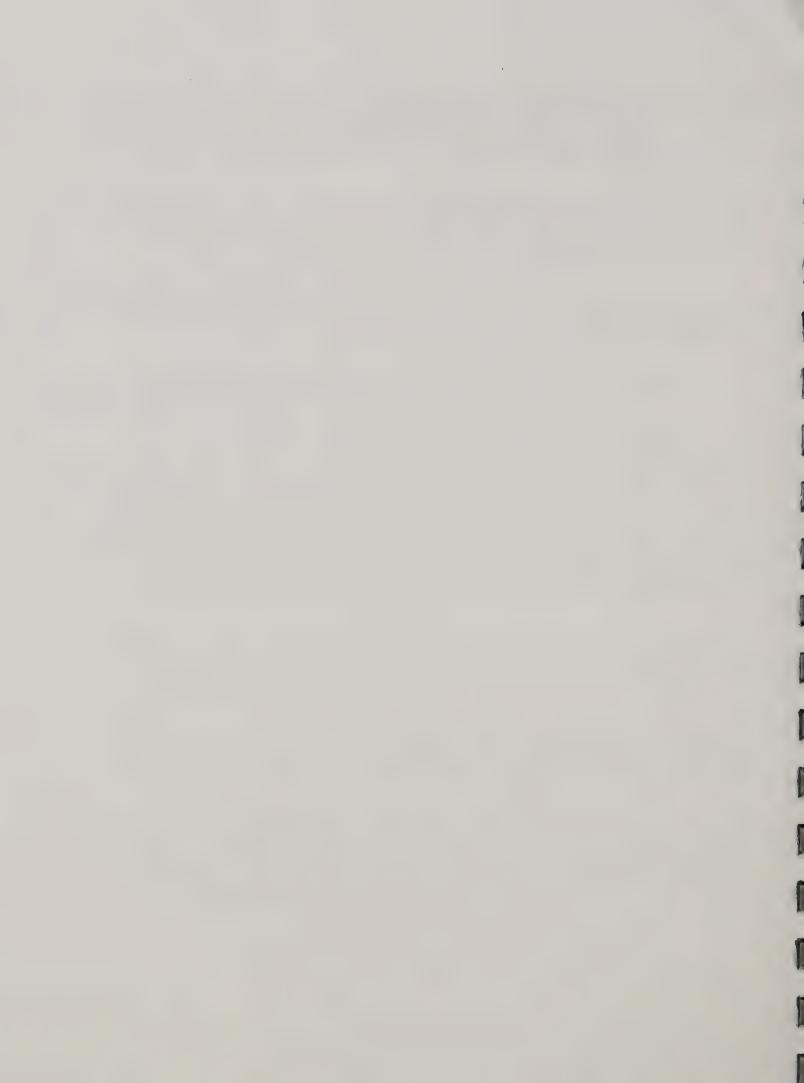
- Ekblad, R., J. Armstrong, J. Barry, J. Bergen, I. Millers and P. Shea. 1979. Forest and range aerial pesticide application technology A problem analysis. 7934-2804. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R.B. and J.W. Barry. 1983. A review of progress in technology of aerial application of pesticides. 8334-2803. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R.B., R.B. Hauser and J.W. Barry. 1989. Program WIND: Event modeling for complex terrain (EMCOT). MTDC 89-8. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Ekblad, R., K. Windell and B. Thompson. 1990. EMCOT weather station. 9034-2806 MTDC. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Ekblad, R.B. and J.W. Barry. 1990. Selection and verification of complex terrain, wind flow model for spray transport Briefing paper & progress report. 9052-2821 MTDC. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Ekblad, R.B. and J.W. Barry. 1990. Selection and verification of spray droplet evaporation model Briefing paper and progress report. 9052-2822 MTDC. USDA Forest Service, Technology and Development Program, Missoula, MT.
- Ekblad, R. and D.A. Lassila. 1991. TM Biocontrol-1 and Gypchek airport spray trials. 9134-2812 MTDC. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Ekblad, R.B., C.D. Whiteman, K.J. Allwine and J.W. Barry. 1991. Wind flow models for spray transport in complex terrain. 9134-2832 MTDC. USDA Forest Service, Technology and Development Program, Missoula, MT.
- Hardy, C.E. 1987. Aerial application equipment. 8734-2804. Prepared under Contract No. 53-0343-5-00847 for USDA Forest Service, Equipment Development Center, Missoula, MT.

- Jasumback, A.E. and A.J. Mattila. 1970. Aircraft spray systems Project record report. ED&T 1541. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Jasumback, A.E. 1974. Spray aircraft tracking/guidance system: A concept Project record. 7452-2218. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Jasumback, A.E. 1977. Spray system and ground handling equipment 1976 Helena National Forest spray project Townsend, Montana Special report. 7734-2806. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Kautz, J. and R.B. Ekblad. 1984. Analysis of spray deposit cards sensitive to nondyed mixes. 8434-2202. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Kilroy, W.A. and H. Thistle. 1994. Spray block marking Field comments. 9434-2855-MTDC. USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Knudson, R.J. and G.A. Stokes. 1974. Development of marking systems Project record. 7524-2216. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Larson, J. and R. Hallman. 1980. Equipment for reforestation and timber stand improvement. 8024-2512. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Larson, J.E. 1980. Revegetation equipment catalog. 8042-2501. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Lassila, D.A. and R. Ekblad. 1991. Meteorological data supplement to aerial applications of insecticide in Douglas-fir seed orchards. 9134-2808 MTDC. USDA Forest Service, Technology and Development Center, Missoula, MT.

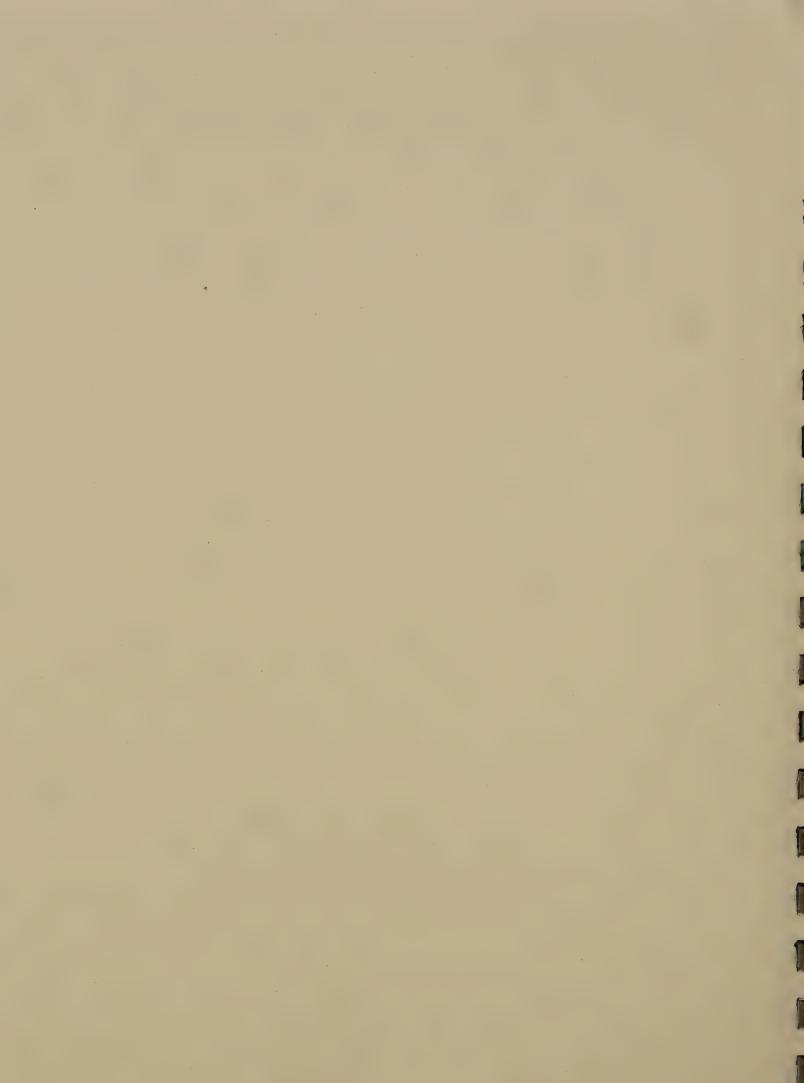
- Marsalis, R.L. 1974. Review of accomplishments of forest pest management's equipment development program (FY 64 FY 74) Project record. ED&T 1422. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Mattila, A.J. 1972. Rotating platform for sampling aerial spray deposit Project record. ED&T 2260. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Rafferty, J.E. 1984. Review of the AGLINE code compatibility with FSCBG code requirements. 8434-2802. Prepared under Purchase Order No. 43-0343-2-1312 by H.E. Cramer Company, Inc. for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Teske, M.E. 1986. User manual extension for the computer code AGDISP mod 3.0. 8634-2802. Prepared under Contract No. 53-0343-3-00716 by Continuum Dynamics, Inc. for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Teske, M.E. 1988. AGDISP comparisons with the Mission swath width characterization studies Final report. 8834-2801. Prepared under Contract No. 53-0343-7-00952 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Teske, M.E. 1988. Running the Forest Service dispersal code AGDISP on a personal computer. 8834-2804. Prepared under Contract No. 40-0343-7-2005 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Teske, M.E. 1989. User manual extension for the computer code AGDISP mod 5.0. MTDC 89-2. Prepared under Contract No. 53-0347-00952 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Teske, M.E., A.J. Bilanin, J.W. Barry and R.B. Ekblad. 1989. AGDISP and FSCBG aerial spray model Source decay coefficients. MTDC 89-28. USDA Forest Service, Technology and Development Center, Missoula, MT.

- Teske, M.E. 1989. An examination of AGDISP helicopter model comparisons with data and detailed helicopter code predictions. MTDC 89-29. Prepared under Contract No. 53-0343-7-00952 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Teske, M.E. 1989. AGDISP analysis of vortex decay from Program WIND phases I and II Final report. MTDC 89-30. Prepared under Contract No. 53-0343-7-00952 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Teske, M.E., D.B. Twardus and R.B. Ekblad. 1990. Swath width evaluation. 9034-2807 MTDC. Prepared under Contract No. 53-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1991. SDC: Size distribution calculation User manual. 9134-2810 MTDC. Prepared under Contract No. 53-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Teske, M.E. 1991. User manual extension for the computer code AGDISP mod 6.0. 9134-2828 MTDC. Prepared under Contract No. 53-0347-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Technology and Development Center, Missoula, MT.
- Thistle, H. 1993. Meteorological data 1992 Utah gypsy moth eradication program. 9334-2828-MTDC. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Thistle, H., A. Jasumback, and W. Kilroy. 1994. GPS aircraft navigation test plan (Final draft). 9534-2807-MTDC. USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Thistle, H.W., A.E. Jasumback, W. Kilroy, and J.W. Barry. 1994. Testing DGPS aircraft guidance and recording systems for use in complex terrain Preliminary report. 9534-2812-MTDC. USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.

- Thistle, H. 1995. Forest Pest Management 5-year program. 9534-2825-MTDC. USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Williamson, G.G., M.E. Teske and R.G. Geyer. 1986. Experimental study of aircraft wakes in forest canopies. 8634-2811. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Windell, K. 1994. FY 94 Progress report, thermal insect control. TA&S #4E32P11. USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Windell, K. 1995. Thermal insect control FY 95 progress report (TA&S# 3E32P11). 9534-2843-MTDC. USDA Forest Service, Missoula Technology & Development Center, Missoula, MT.
- Yates, W.E., N.B. Akesson and R.E. Cowden. 1984. Measurement of drop size frequency from nozzles used for aerial applications of pesticides in forests Final report. 8434-2804. Prepared under cooperative agreement by University of California (Davis) for USDA Forest Service, Equipment Development Center, Missoula, MT.



MTDC UNNUMBERED REPORTS AND PAPERS



### MTDC UNNUMBERED REPORTS AND PAPERS

- Amundsen, E.W. 1973. Spraying the rice crop of Pakistan for rice stem borer. Special report USDA Forest Service Pakistan spray project. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Barry, J.W. and R. Ekblad. 1975. Action plan for meteorological and spray assessment support of pilot control project of carbaryl, trichlorfom, and *Bacillus thuringiensis* against western spruce budworm Beaverhead and Gallatin national forest, Montana. U.S. Army, Dugway Proving Ground, Dugway, UT and USDA Forest Service, Missoula Equipment and Development Center, Missoula, MT.
- Ekblad, R.B. 1968. A discussion of dry liquids for control of spruce budworm. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Ekblad, R.B. 1987. Aerial spray modeling. Seed orchard pest management workshop, Savannah, Georgia. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Ekblad, R.B. 1989. Management question? How well does model represent real world? AGDISP mod 5.0 workshop. USDA Forest Service, Technology and Development Center, Missoula, MT.
- Jasumback, A.E. 1977. Spray system and ground handling equipment, 1977 R-3 spruce budworm spray project, Cuba, New Mexico. USDA Forest Service, Equipment Development Center, Missoula, MT.
- Thistle, H.W. Jr., J.W. Barry, and M.E. Teske. 1993. Computing total accountancy of aerially released material (Poster). Presented at the *Society of environmental toxicology and chemistry*, 14th annual meeting. Houston, TX.
- Thistle, H.W. Jr., J.W. Barry, and M.E. Teske. 1993. Development and validation of the FSCBG model for the simulation of spray drift. Presented at the A.N.P.P. B.C.P.C. Second international symposium on pesticides application techniques. Strasbourg, France.

Thistle, H.W. 1995. The role of atmospheric stability in the dispersion of pesticides in the atmosphere. Presented at the 1995 national meeting of the American mosquito control association, aerosol cloud dynamics symposium. Portland, OR.

# JOURNAL AND BOOK PUBLICATIONS BY FOREST SERVICE AUTHORS

#### JOURNAL AND BOOK PUBLICATIONS BY FOREST SERVICE AUTHORS

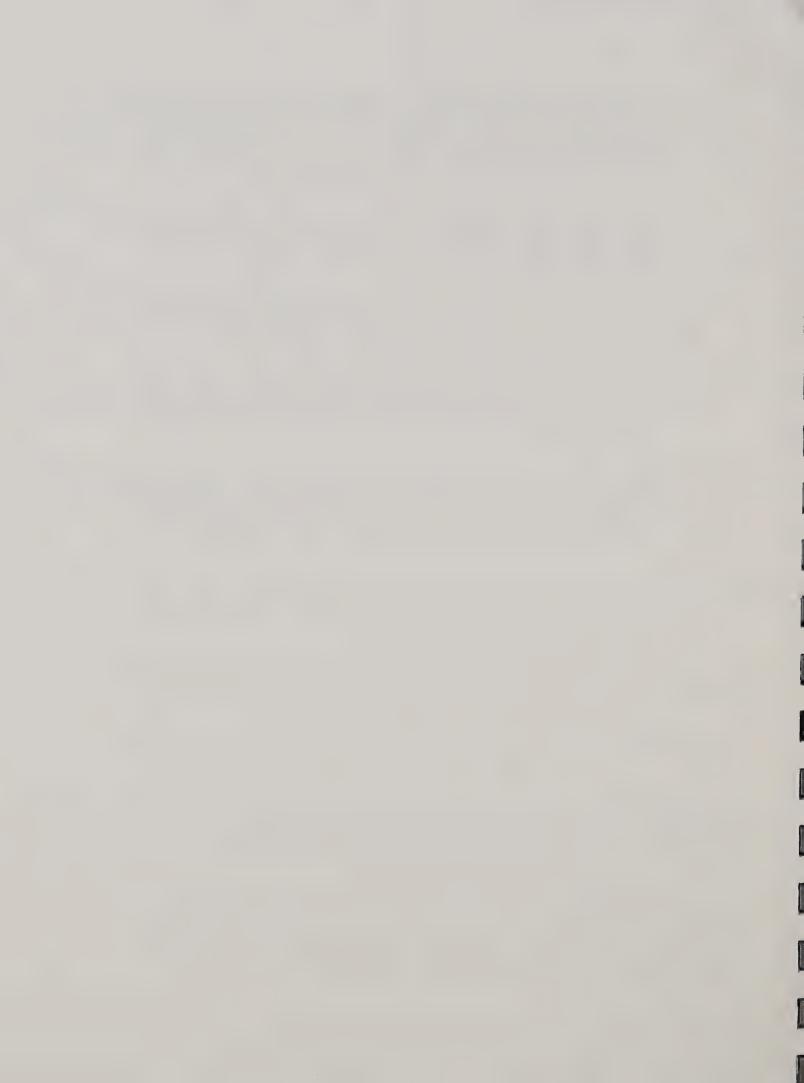
- Anderson, D.E., D.R. Miller, Y. Wang, W.G. Yendol, K. Mierzejewski, and M.L. McManus. 1992. Deposition of aerially applied Bt in an oak forest and its prediction with the FSCBG model. *Journal of Applied Meteorology* 31(12:1457-1466.
- Barry, J.W., M. Tysowsky, Jr., R.B. Ekblad and W.M. Ciesla. 1974. Carrier dusts Feasibility for forest insect control. *Transactions of the ASAE* 17(4):645-650.
- Barry, J.W. 1977. Problems associated with maintaining consistent swaths when spraying forests with helicopters. *Agricultural Aviation* 18(3):18-22.
- Barry, J.W., W.M. Ciesla, M. Tysowsky, Jr., and R.B. Ekblad. 1977. Impaction of insecticide particles on western spruce budworm larvae and Douglas-fir needles. *Journal of Economic Entomology* 70(3):387-388.
- Barry, J.W. and R.B. Ekblad. 1978. Deposition of insecticide drops on coniferous foliage. *Transactions of the ASAE* 21(3):434-441.
- Barry, J.W., J. Wong, P. Kenney, L. Barber, H. Flake, and R. Ekblad. 1981. Deposition of pesticide drops on pine foliage from aerial applications. *Zeitschrift fur angewandte Entomologie, Sonderdruck aus Bd* 92(19812), H.3, S.224-232.
- Barry, J.W. 1984. Deposition of chemical and biological agents in conifers, 117-137. In: ACS Symposium Series 238: *Chemical and Biological Controls in Forestry*. Washington: American Chemical Society.
- Barry, J.W., L.R. Barber, P.A. Kenney, and N. Overgaard. 1984. Feasibility of aerial spraying of southern pine seed orchards. *Southern Journal of Applied Forestry* 8(3):127-131.
- Barry, J.W. and C.M. Riley. 1993. Predicting fate of pesticides in forest ecosystems. *Environmental Toxicology and Chemistry* 12:397-398.
- Barry, J.W. 1993. Aerial application to forests. In *Application Technology for Crop Protection*, eds. G.A. Matthews and E.C. Hislop, 241-273. Wallingford, Oxon, United Kingdom: CAB International.

- Barry, J.W., P.J. Skyler, M.E. Teske, J.A. Rafferty, and B.S. Grim. 1993. Predicting and measuring drift of *Bacillus thuringiensis* sprays. *Environmental Toxicology and Chemistry* 12:1977-1989.
- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. 1989. AGDISP: The aircraft spray dispersion model, code development and experimental validation. *Transactions of the ASAE* 32(1):327-334.
- Bohdan, M. 1964. A rapid method for estimating the atomization of oil-base aerial sprays. *Journal of Economic Entomology* 57(1):16-19.
- Brown, L.R., H.K. Kaya, R.C. Reardon, and R.A. Fusco. 1984. The Santa Barbara gypsy moth eradication effort. *California Agriculture* 38:4-7.
- Bush, P.B., S.S. Chapman, Y.C. Berisford, and J.W. Taylor. 1995. Use of FSCBG to predict pesticide deposition on a Piedmont pine seed orchard. *Southern Journal of Applied Forestry* 19(4):145-150.
- Campbell, R.W., N. Srivastava, T.R. Torgersen, and R.C. Beckwith. 1984. Patterns of occurrence of the western spruce budworm (Lepidoptera: Tortricidae): Larvae, pupae and pupal exuviae, and egg masses. *Environmental Entomology* 13(2):522-530.
- Ciesla, W.M. and R.L. Livingston. 1980. Using the D-max method for estimating atomization of water-base sprays. *Journal of Economic Entomology* 73(4):615-616.
- Curbishley, T.B., M.E. Teske, and J.W. Barry. 1993. Validation of the CASPR aerial spray efficiency model. *Applied Engineering*, 9(2):199-203.
- Dubois, N.R., K. Mierzejewski, R.C. Reardon, W. McLane, and J.J. Witcosky. 1994. *Bacillus thuringiensis* field applications: Effect of nozzle type, drop size and application timing on efficacy against gypsy moth. In a Special Issue of *Journal of Environmental Science and Health*, Part B Pesticides, Food Contaminants, and Agricultural Wastes, Vol. B29, Number 4, pp. 88-104.

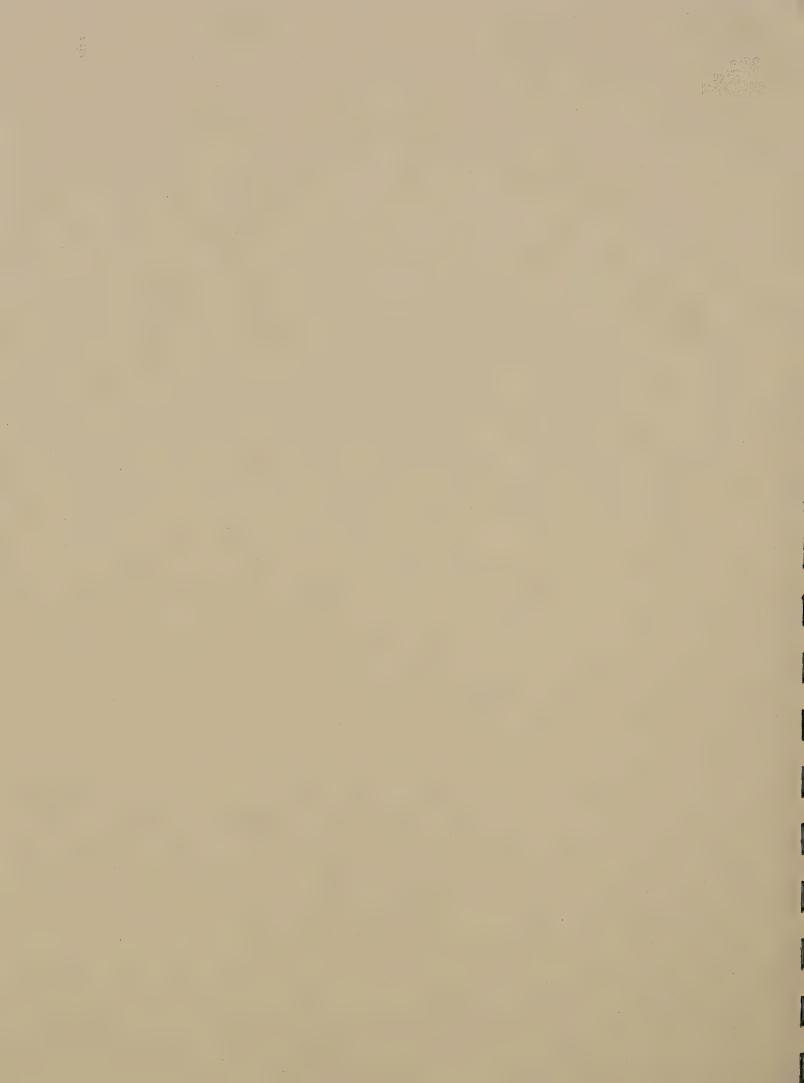
- Ekblad, R.B. and J.W. Barry. 1983. Technological progress in aerial application of pesticides, eds. Willa Y. Garner and John Harvey, Jr., 79-94. In: ACS Symposium Series 238: *Chemical and Biological Controls in Forestry*. Washington, DC: American Chemical Society.
- Hall, F.R. and J.W. Barry (eds.). 1995. *Biorational Pest Control Agents Formulation and delivery*. ACS Symposium Series 595. Washington, DC: American Chemical Society.
- Hall, F.R. and J.W. Barry. 1995. An overview of biorational pest control agents. In: ACS Symposium Series 595: *Biorational Pest Control Agents Formulation and Delivery*, eds. Franklin R. Hall and John W. Barry, 1-18. Washington, DC: American Chemical Society.
- Klein, W.H. and F.B. Lewis. 1966. Experimental spraying with *Bacillus thuringiensis* for control of the spruce budworm. *Journal of Forestry*, July:458-462.
- Luo, Y., D.R. Miller, X. Yang, M.A. McManus, and H.M. Krider. Undated. Characteristics of evaporation from water based bacterial pesticide droplets. Submitted to *Transactions of the ASAE*.
- Maksymiuk, B. 1963. Spray deposit on oil-sensitive cards and spruce budworm mortality. *Journal of Economic Entomology* 56(4):465-467.
- Maksymiuk, B. 1964. A rapid method for estimating the atomization of oilbase sprays. *Journal of Economic Entomology* 57(1):16-19.
- Miller, D.R., W.E. Yendol, and M.L. McManus. 1992. On the field sampling of pesticide spray distributions using teflon spheres and flat cards. *Journal of Environmental Science and Health*, B27(2), 185-208.
- Ragenovich, I.R., J.M. Schmid, D.D. Bennett, J.W. Barry, and C.E. Richmond. 1986. Field evaluation of four insecticides against the pandora moth, 1982. *Insecticide and Acaricide Tests* 11:426.

- Reardon, R.C. and J.D. Podgwaite. 1994. Summary of efficacy evaluations using aerially applied Gypchek<sup>R</sup> LS, Rhoplex<sup>R</sup> B60A, ProMo<sup>R</sup>, optical brightener, field efficacy. In a Special Issue of *Journal of Environmental Science and Health*, Part B Pesticides, Food Contaminants, and Agricultural Wastes, Volume B29, Number 4, pp. 146-163.
- Reardon, R.C. and D.L. Wagner. 1995. Impact of *Bacillus thuringiensis* on nontarget lepidopteran species in broad-leaved forests. In: ACS Symposium Series 595: *Biorational Pest Control Agents Formulation and Delivery*, eds. Franklin R. Hall and John W. Barry, 284-292. Washington, DC: American Chemical Society.
- Roltsch, W.J., F.G. Zalom, J.W. Barry, G.W. Kirfman, and J.P. Edstrom. 1995. Ultra-low volume aerial applications of *Bacillus thuringiensis* variety *kurstaki* for control of peach twig borer in almond trees. *Applied Engineering in Agriculture* 11(1):25-30.
- Shea, P.J. 1995. Use of insect pheromones to manage forest insects Present and future. In: ACS Symposium Series 595: *Biorational Pest Control Agents Formulation and Delivery*, eds. Franklin R. Hall and John W. Barry, 272-283. Washington, DC: American Chemical Society.
- Teske, M.E., K.P. Bentson, R.E. Sandquist, J.W. Barry, and R.B. Ekblad. 1991. Comparison of FSCBG model predictions with Heather Seed Orchard deposition data. *Journal of Applied Meteorology* 30:1366-1375.
- Teske, M.E. and J.W. Barry. 1993. Parametric sensitivity in aerial application. Transactions of the ASAE 36(1):27-33.
- Teske, M.E., A.J. Bilanin, and J.W. Barry. 1993. Decay of aircraft vortices near the ground. *AIAA Journal* 31(8):1531-1533.
- Teske, M.E., J.F. Bowers, J.E. Rafferty, and J.W. Barry. 1993. FSCBG: An aerial spray dispersion model for predicting the fate of released material behind aircraft. *Environmental Toxicology and Chemistry* 12(3):453-464.
- Teske, M.E., J.W. Barry, and H.W. Thistle Jr. 1994. Aerial spray drift modeling. In *Environmental Modeling Volume II: Computer Methods and Software for Simulating Environmental Pollution and Its Adverse Effects*, ed. P. Zannetti, 11-42. Southampton: Computational Mechanics Publications.

- Teske, M.E., J.W. Barry, and H.W. Thistle, Jr. 1995. Environmental fate and accountancy. In: ACS Symposium Series 595: *Biorational Pest Control Agents Formulation and Delivery*, eds. Franklin R. Hall and John W. Barry, 95-107. Washington, DC: American Chemical Society.
- Thistle, H.W., D.R. Murray, M.R. Ratte, and M.R. Carroll. 1995. Atmospheric tracer concentrations from elevated source in urban core. *Journal of Environmental Engineering* 121(1):5-15.
- Thistle, H.W., D.R. Murray, M.R. Ratte, and M.R. Carroll. 1995. Observed downwash concentrations compared to ISCST predictions in urban core. *Journal of Environmental Engineering* 121(1):16-20.
- Touma, J.S., W.M. Cox, H. Thistle, and J.G. Zapert. 1995. Performance evaluation of dense gas dispersion models. *Journal of Applied Meteorology* 34(3):603-615.
- Yang, X., D.R. Miller, and M.E. Montgomery. 1993. Vertical distributions of canopy foliage and biologically active radiation in a defoliated/refoliated hardwood forest. *Agricultural and Forest Meteorology* 67:129-146.



ASAE PAPERS BY FOREST SERVICE AUTHORS



### ASAE PAPERS BY FOREST SERVICE AUTHORS

- Barry, J.W. and R.B. Ekblad. 1977. Deposition of insecticide drops on coniferous foliage. ASAE Paper No. 77-1041. St. Joseph, MI:ASAE.
- Barry, J.W., R.B. Ekblad and L. Barber. 1980. Aerial application to coniferous seed orchards. ASAE Paper No. AA-80-004. St. Joseph, MI:ASAE.
- Barry, J.W., R.B. Ekblad, P.A. Kenney and L.A. Barber. 1983. Drift from aerial application to coniferous seed orchards. ASAE Paper No. AA-83-003. St. Joseph, MI:ASAE.
- Barry, J.W. and R.B. Ekblad. 1983. Forest Service spray drift modeling 1971-1982. ASAE Paper No. 83-1006. St. Joseph, MI:ASAE.
- Barry, J.W., R.B. Ekblad, J.E. Rafferty and A.J. Bilanin. 1987. Aerial spray models in Program WIND. ASAE Paper No. PR87-103. St. Joseph, MI:ASAE.
- Barry, J.W., W.E. Newton and R.B. Ekblad. 1988. Distribution of aerial sprays in an almond orchard. ASAE Paper No. AA88-005. St. Joseph, MI:ASAE.
- Barry, J.W., R.B. Ekblad, M.E. Teske and P.J. Skyler. 1990. Technology transfer Forest Service aerial spray models. ASAE Paper No. 901017. St. Joseph, MI:ASAE.
- Barry, J.W., M.E. Teske, J.A. Rafferty, B.S. Grim and P.J. Skyler. 1992. Predicting spray drift in complex terrain. ASAE Paper No. 921085. St. Joseph, MI:ASAE.
- Barry, J.W., M.E. Teske, B.S. Grim, W.J. Roltsch, and F.G. Zalom. 1993. Observing and predicting spray penetration in tree canopies. ASAE Paper No. 931060. St. Joseph, MI:ASAE.
- Bilanin, A.J., M.E. Teske, J.W. Barry and R.B. Ekblad. 1987. AGDISP code development and data comparison. ASAE Paper No. AA87-1539. St. Joseph, MI:ASAE.

- Bush, P.B., J.W. Taylor, and J.W. Barry. 1994. FSCBG: A management tool for aerial pesticide application. ASAE Paper No. 941030. St. Joseph, MI: ASAE.
- Curbishley, T.B., M.E. Teske and J.W. Barry. 1991. Spray dispersion visualization using FSCBG 4.0. ASAE Paper No. 911051. St. Joseph, MI:ASAE.
- Curbishley, T.B., P.J. Skyler, M.E. Teske, and J.W. Barry. 1992. FSCBG 4.0 aerial spray model. ASAE Paper No. 921069. St. Joseph, MI:ASAE.
- Curbishley, T.B., M.E. Teske, and J.W. Barry. 1993. A productivity model for aerial application. ASAE Paper No. 931072. St. Joseph, MI:ASAE.
- Ekblad, R.B. and J.W. Barry. 1977. Forest spraying: Recent developments and future needs. ASAE Paper No. 77-1572. St. Joseph, MI:ASAE.
- Ekblad, R.B., J.W. Barry, A. Bilanin and R. Hauser. 1987. Experimental verification of an aerial spray model in complex terrain. 1987. ASAE Paper No. 87-1540. St. Joseph, MI:ASAE.
- Ekblad, R.B., M. Teske, R. Banaugh and J.W. Barry. 1988. Computer assisted spray productivity routine (CASPR). ASAE Paper No. AA88-009. St. Joseph, MI:ASAE.
- Ekblad, R.B., C.D. Whiteman, K.J. Allwine and J.W. Barry. 1991. Wind flow models for spray transport in complex terrain. ASAE Paper No. 911057. St. Joseph, MI:ASAE.
- Flake, H.W. Jr., M.E. Teske, and J.W. Barry. 1993. FSCBG spray swath width predictions. ASAE Paper No. AA93-003. St. Joseph, MI:ASAE.
- Teske, M.E., J.W. Barry and R.B. Ekblad. 1990. Canopy penetration and deposition in a Douglas-fir seed orchard. ASAE Paper No. 901019. St. Joseph, MI:ASAE.

- Teske, M.E., J.W. Barry and R.B. Ekblad. 1991. Preliminary sensitivity study of aerial application inputs for FSCBG 4.0. ASAE Paper No. 911052. St. Joseph, MI:ASAE.
- Teske, M.E. and J.W. Barry. 1992. FSCBG model input sensitivity study. ASAE Paper No. 921086. St. Joseph, MI:ASAE.
- Teske, M.E. and J.W. Barry. 1993. FSCBG spray drift predictions. ASAE Paper No. 931101. St. Joseph, MI:ASAE.
- Teske, M.E., J.W. Barry, P.J. Skyler, F.G. Zalom, and G.W. Kirfman. 1993. FSCBG application to canopy spray penetration and deposition. ASAE Paper No. 931062. St. Joseph, MI:ASAE.
- Teske, M.E., J.W. Barry, and J.H. Ghent. 1994. Aircraft deposit coverage over canopies. ASAE Paper No. 941033. St. Joseph, MI:ASAE.
- Teske, M.E., J.W. Barry, and J.E. Rafferty. 1994. An examination of spray penetration through scrub oak canopies. ASAE Paper No. 941031. St. Joseph, MI:ASAE.
- Thistle, H.W., M.E. Teske, and J.W. Barry. 1993. The relationship between incanopy micrometeorology and droplet deposition. ASAE Paper No. 931058. St. Joseph, MI:ASAE.
- Thistle, H.W. Jr., M.E. Teske, and J.W. Barry. 1994. Penetration of aerially released spray material into forest canopies: A review of early work. ASAE Paper No. 941029. St. Joseph, MI:ASAE.

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	ASAE PAP	ERS BY NON	-FOREST SE	RVICE AUTHO	RS



#### ASAE PAPERS BY NON-FOREST SERVICE AUTHORS

- Akesson, N.B., W.E. Yates and R.E. Cowden. 1977. Dispersion of materials released in the wake of an aircraft. ASAE Paper No. 77-1043. St. Joseph, MI:ASAE.
- Akesson, N.B., R. Kumar and W.E. Yates. 1979. Airborn transport of pesticides aerosols applied for insect control. ASAE Paper No. 79-1503. St. Joseph, MI:ASAE.
- Ahmed, M. Sid and R.B. Brown. 1993. Prediction of droplet trajectories from air-blast sprayers. ASAE Paper No. 93-1003. St. Joseph, MI:ASAE.
- Ahmed, M.A. and D.B. Smith. 1994. Prediction of hydraulic nozzle deposit patterns. ASAE Paper No. 94-1025. St. Joseph, MI:ASAE.
- Barnes, B.M., J.T. Walker and D.R. Gardisser. 1991. Effects of fertilizer particle properties on aerial distribution. ASAE Paper No. AA91-003. St. Joseph, MI:ASAE.
- Barnes, B.M., J.T. Walker and D.R. Gardisser. 1993. Granular property effects on aerial herbicide distribution. ASAE Paper No. 931122. St. Joseph, MI:ASAE.
- Bintner, D.W., S.E. Conrad and R.W. Tate. 1977. Effect of nozzle positioning on spray deposit uniformity. ASAE Paper No. 77-1038. St. Joseph, MI:ASAE.
- Bode, L.E. and B.J. Butler. 1981. The three D's of droplet size: Diameter, drift, and deposit. ASAE Paper No. AA-81-004. St. Joseph, MI:ASAE.
- Bouse, L.F. and J.B. Carlton. 1982. Factors affecting distribution of herbicide pellets by aircraft. ASAE Paper No. AA-82-007. St. Joseph, MI:ASAE.
- Bouse, L.F. and J.B. Carlton. 1983. Factors affecting size distribution of vegetable oil spray droplets. ASAE Paper No. AA-83-006. St. Joseph, MI:ASAE.

- Bouse, L.F., I.W. Kirk and L.E. Bode. 1989. Effect of spray mixture on droplet size. ASAE Paper No. 891006. St. Joseph, MI:ASAE.
- Bouse, L.F., S.G. Whisenant and J.B. Carlton. 1990. Aerial spray deposition on mesquite. ASAE Paper No. AA90-005. St. Joseph, MI:ASAE.
- Bouse, L.F. 1991. Effect of nozzle type and operation on spray droplet size. ASAE Paper No. AA91-005. St. Joseph, MI:ASAE.
- Brown, R.B., G.W. Anderson and M. Morse. 1990. Local weather effects on herbicide losses during spraying. ASAE Paper No. 90-1006. St. Joseph, MI:ASAE.
- Burt, E.C., D.B. Smith, E.P. Lloyd, J.R. McCoy, F.C. Tingle, and R.J. Daum. 1968. Comparisons of the quantity of deposit and boll weevil control with three ULV droplet sizes, a standard ULV application and a conventional E.C. application. ASAE Paper No. 68-147. St. Joseph, MI:ASAE.
- Carlton, J.B., L.F. Bouse, J.A. Witz and H.P. O'Neal. 1982. Automating spray deposit analysis. ASAE Paper No. AA-82-004. St. Joseph, MI:ASAE.
- Farrell-Poe, K.L., S.E. Poe and H.M. Deer. 1992. Pesticide storage facility design and management plan. ASAE Paper No. 921089. St. Joseph, MI:ASAE.
- Forbes, A.M., S. Cenkowski and J.S. Townsend. 1991. The effectiveness of windscreens in reducing spray drift. ASAE Paper No. 91-1084. St. Joseph, MI:ASAE.
- Fox, R.D., D.L. Reichard, C.R. Krause, R.D. Brazee, S.A. Svensson and and F.R. Hall. 1993. Effect of sprayer type on downwind deposits from spraying orchards. ASAE Paper No. 931078. St. Joseph, MI:ASAE.
- Franz, E. 1990. Progress towards a machine vision system for spray-deposit analysis: software development. ASAE Paper No. 90-7515. St. Joseph, MI:ASAE.

- Franz, E. 1991. On-board monitoring of ground speed and height-of-flight of agricultural aircraft. ASAE Paper No. AA91-004. St. Joseph, MI:ASAE.
- Franz, E. 1992. A simple spray coverage analyzer. ASAE Paper No. 921617. St. Joseph, MI:ASAE.
- Gardisser, D.R. and J.T. Walker. 1991. Airspeed measurements of agricultural aircraft spreaders. ASAE Paper No. AA91-002. St. Joseph, MI:ASAE.
- Goering, C.E. and B.J. Butler. 1973. Paired field studies of herbicide drift. ASAE Paper No. 73-1575. St. Joseph, MI:ASAE.
- Goering, C.E., D.B. Smith, M.L. Huhman, A.R. Kliethermes, and M.W. Storm Jr. 1977. Targets for spray drift measurement. *Transactions of the ASAE* 20(1):35-41.
- Goering, C.E. and D.B. Smith. 1978. Equations for droplet size distributions in sprays. *Transactions of the ASAE* 21(2):209-216.
- Goering, C.E., D.B. Smith, and G.L. Hahn. 1979. Meteorological data requirements The view of some agricultural scientists. ASAE Paper No. 79-4538. St. Joseph, MI:ASAE.
- Hirsch, I., N. Maimon and D. Schavit. 1991. Improving spray penetration into cotton canopies. ASAE Paper No. AA91-006. St. Joseph, MI:ASAE.
- Hoffman, W.C. and M. Salyani. 1994. Spray deposition from day and night applications. ASAE Paper No. 94-1026. St. Joseph, MI:ASAE.
- Hofman, V. 1991. Canopy penetration of spray into sugarbeets. ASAE Paper No. 911031. St. Joseph, MI:ASAE.
- Huddleston, E.W. and R. Sanderson. 1988. Swath checking 4-engine aircraft. ASAE Paper No. AA88-006. St. Joseph, MI:ASAE.
- Isler, D.A. 1963. Methods for evaluating coverage and drop size in forest spraying. *Transactions of the ASAE* 6(3):231-233.

- Isler, D.A. and J.B. Carlton. 1964. The effect of mechanical factors on atomization of oil-base aerial sprays. ASAE Paper No. 64-608. St. Joseph, MI:ASAE.
- King, E.E. and R. King. 1983. Droplet size vs biological effectiveness of oil sprays. ASAE Paper No. AA-83-008. St. Joseph, MI:ASAE.
- Kirk, I.W., L.F. Bouse, J.B. Carlton, E. Franz and R.A. Stermer. 1991. Aerial application parameters influence spray deposition in cotton canopies. ASAE Paper No. AA91-007. St. Joseph, MI:ASAE.
- Kuhlman, D.K., R.W. Whitney and L.O. Roth. 1985. Uniform aerial application using computer simulation. ASAE Paper No. AA85-007. St. Joseph, MI:ASAE.
- Mickle, R.E. 1990. Canadian laser mapping technique for aerial spraying. ASAE Paper No. AA90-004. St. Joseph, MI:ASAE.
- Mierzejewski, K., J. Bryant, W. Yendol, R. Reardon, W. McLane and T. Roland. 1987. An experimental evaluation of swath modelling computer programs. ASAE Paper No. AA87-005. St. Joseph, MI:ASAE.
- Mohamed, A.A. and W.E. Steinke. 1992. Atomization characteristics of some hydraulic nozzles. ASAE Paper No. 92-1614. St. Joseph, MI:ASAE.
- Pearson, S.L., T. Reed and B. Gobel. 1993. New developments in spray tips to reduce drift. ASAE Paper No. 931081. St. Joseph, MI:ASAE.
- Ramotar, R., D.B. Smith, and S.K. Leduc. 1982. Influence of wind velocity on spray decisions. ASAE Paper No. MC 82-136. St. Joseph, MI:ASAE.
- Reeves, K.C. and A.R. Womac. 1992. Reduced drift characteristics of preorifice, flat spray RF raindrop nozzles. ASAE Paper No. 921612. St. Joseph, MI: ASAE.
- Rhee, J., B.W. Young and L.E. Bode. 1990. Transport of spray droplets from flat-fan nozzles. ASAE Paper No. 901001. St. Joseph, MI:ASAE.

- Richardson, B., J.Ray, K. Miller, A. Vanner and N. Davenhill. 1993.

  Measured and modelled spray drift from three nozzle types following aerial application of a herbicide simulant. ASAE Paper 931102. St. Joseph, MI:ASAE.
- Salem, E.B. and D.K. Giles. 1992. Plant canopy penetration from controlled air jets. ASAE Paper No. 92-1061. St. Joseph, MI:ASAE.
- Salyani, M. and R.P. Cromwell. 1991. Spray drift from ground and aerial applications. ASAE Paper No. 91-1083. St. Joseph, MI:ASAE.
- Sanderson, R., E.W. Huddleston, J.B. Ross, A.J. Hewitt and S.N. Bartee. 1991. Comparison of the drift potential and droplet size spectra produced by different formulations of propanil and adjuvants. ASAE Paper No. AA91-008. St. Joseph, MI:ASAE.
- Saputro, S., D.B. Smith and D.R. Shaw. 1990. Expert system for aerial spray drift. ASAE Paper No. 90-1018. St. Joseph, MI:ASAE.
- Saputro, S., D.B. Smith, and D.R. Shaw. 1991. Expert system for agricultural aerial spray drift. *Transactions of the ASAE* 34(4):764-772 (corrected).
- Saunders, W.J., R.W. Tate and G.W. Ware. 1976. Analysis of aerial sprays from conventional and drift-reduction nozzles. ASAE Paper No. 76-1062. St. Joseph, MI:ASAE.
- Smith, D.B., D.L. Hostetter, and C.M. Ignoffo. 1977. Specifications for applying two microbial insecticides. ASAE Paper No. 77-1034. St. Joseph, MI:ASAE.
- Smith, D.B., D.L. Hostetter, F.D. Harris, C.R. Vogt, and R.W. Sommer. 1982. Deposition of suspension spray particles. *Transactions of the ASAE* 25(5):1141-1147.
- Smith, D.B., F.D. Harris, and C.E. Goering. 1982. Variables affecting drift from ground boom sprayers. *Transactions of the ASAE* 25(6):1499-1503.

- Smith, D.B., D.D. Plummer, F.D. Harris, and E.E. Pickett. 1983. Recovery of fluorescent tracer dyes. *Transactions of the ASAE* 26(5):1308-1311.
- Smith, D.B. and M.H. Willcutt. 1992. Spreadsheet for aerial atomization and calibration decisions. ASAE Paper No. AA92-003. St. Joseph, MI:ASAE.
- Smith, D.B. 1992. A proposal for pre-field broadcast spray deposit evaluations. *Transactions of the ASAE* 35(1):33-37.
- Snyder, M.J. 1993. The FMC custom delivery system for planting time application of Furadan 4F insecticide/nematicide. ASAE Paper No. 931124. St. Joseph, MI:ASAE.
- Steinke, W.E. and W.E. Yates. 1987. Using similarity theory to predict airborne pesticide concentrations. ASAE Paper No. 87-1038. St. Joseph, MI:ASAE.
- Steinke, W.E. and W.E. Yates. 1989. Modifying gaussian models to obtain improved drift predictions. ASAE Paper No. 891525. St. Joseph, MI:ASAE.
- Steinke, W.E., B.W. Wilson, J.N. Seiber and F.G. Zalom. 1992. Drift measurements in dormant orchard spraying. ASAE Paper No. 921083. St. Joseph, MI:ASAE.
- Stermer, R.A., L.F. Bouse, J.B. Carlton, I.W. Kirk and L.E. Bode. 1988. Comparisons of various techniques for measuring spray deposition. ASAE Paper No. AA88-001. St. Joseph, MI:ASAE.
- Strickland, R.M. and C.J. Luther. 1992. US EPA 199X worker protection standards for agricultural pesticides. ASAE Paper No. 921087. St. Joseph, MI:ASAE.
- Sundaram, A. 1982. Foliar impaction and distribution of aerially sprayed encapsulated droplets. ASAE Paper No. 82-1006. St. Joseph, MI:ASAE.

- Sundarum, A. 1993. Droplet spreading and penetration of aqueous pesticide droplets in cuticular wax of natural and simulated fir foliage. ASAE Paper No. 931057. St. Joseph, MI:ASAE.
- Tate, R.W. 1977. Droplet size distributions for drift reduction nozzles. ASAE Paper No. 77-1503. St. Joseph, MI:ASAE.
- Valco, T.D., L.F. Bouse, J.B. Carlton, E. Franz, I.W. Kirk and W.C. Hoffman. 1991. Aerial drift reduction demonstrations. ASAE Paper No. AA91-001. St. Joseph, MI:ASAE.
- Walker, J.T. and D.R. Gardisser. 1988. Modeling fertilizer particle trajectories. ASAE Paper No. AA88-003. St. Joseph, MI:ASAE.
- Walker, J.T. and D.R. Gardisser. 1989. Using AGDISP for dry material deposition pattern analysis. ASAE Paper No. AA89-006. St. Joseph, MI:ASAE.
- Williams, D.L., C.E. Goering, M.R. Bebhardt, and D.B. Smith. 1974. Distribution from foam type nozzles and its effect on herbicide performance. ASAE Paper No. 74-1012. St. Joseph, MI:ASAE.
- Winterfeld, R.G. and H.R. Moffitt. 1981. Helicopter spray distribution patterns and deposits. ASAE Paper No. AA-81-006. St. Joseph, MI:ASAE.
- Womac, A.R., J.E. Mulrooney and L.F. Bouse. 1992. Spray drift attributes of high-performance aircraft at varying velocity over cotton foliage. ASAE Paper No. 921084. St. Joseph, MI:ASAE.
- Womac, A.R., J.E. Mulrooney, B.W. Young and P. Alexander. 1993. Spray drift from turboprop-aircraft with boom winglets. ASAE Paper No. 931100. St. Joseph, MI:ASAE.
- Womac, A.R. and W.E. Hart. 1994. Atomization of oil and water sprays with air-assisted nozzles. ASAE Paper No. 941023. St. Joseph, MI:ASAE.

- Yates, W.E., J.M. Ogawa, and N.B. Akesson. 1968. Spray distributions in peach orchards from helicopter and ground applications. ASAE Paper No. 68-617. St. Joseph, MI:ASAE.
- Yates, W.E., N.B. Akesson and R.E. Cowden. 1978. Atmospheric transport of sprays from helicopter applications in mountainous terrain. ASAE Paper No. 78-1504. St. Joseph, MI:ASAE.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1981. Effect of nozzle design on uniformity of droplet size from agricultural aircraft. ASAE Paper No. AA-81-002. St. Joseph, MI:ASAE.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1982. Effect of air speed, nozzle orientation, and spray concentration on drop size spectrums. ASAE Paper No. AA-82-003. St. Joseph, MI:ASAE.
- Yates, W.E., R.E. Cowden and N.B. Akesson. 1983. Drop size spectra from nozzles in high-speed airstreams. ASAE Paper No. AA83-005. St. Joseph, MI:ASAE.
- Yates, W.E. and W. Steinke. 1986. Validation of a computer model for predicting aerial ULV spray patterns. ASAE Paper No. AA86-008. St. Joseph, MI:ASAE.
- Yoshida, K. 1983. Protection factor of work clothing in aerial spraying. ASAE Paper No. AA-83-001. St. Joseph, MI:ASAE.

MAGAZINE AND TRADE JOURNAL ARTICLES
BY FOREST SERVICE AUTHORS



#### MAGAZINE AND TRADE JOURNAL ARTICLES BY FOREST SERVICE AUTHORS

- Barry, J.W. 1980. Turbine-powered conventional agricultural aircraft: A new option for the forest manager. *The World of Agricultural Aviation* Vol. 7(1):24-26, 39-40.
- Barry, J.W. and W.M. Ciesla. 1981. Managing drift in forest spray operations. *Aerial Applicator* Vol. 19(9):8-9, 12, 17.
- Barry, J.W. 1984. Drift control is a problem you can control. *Custom Applicator* Vol. 14(5):28, 33-34.
- Barry, J.W., L.R. Barber, P.A. Kenney and R.B. Ekblad. 1984. Aerial application in southern pine seed orchards. *Agricultural Aviation* Vol. 11(1):8-10, 22.
- Barry, J.W., R.B. Ekblad, M.E. Teske and P.J. Skyler. 1991. Technology takes flight. *Agricultural Engineering* Vol. 72(2):8-10.
- Bilanin, A.J., R. Ekblad and J.W. Barry. 1991. Predicting deposition Rotary wing aircraft. *Conservation Aeronautics* Vol. 3(1).

PAPERS AND ABSTRACTS BY FOREST SERVICE AUTHORS AS LISTED IN PROCEEDINGS AND ABSTRACTS



## PAPERS AND ABSTRACTS BY FOREST SERVICE AUTHORS AS LISTED IN PROCEEDINGS AND ABSTRACTS

- Albini, F.A. 1983. Wind flow into a model forest reexamined. In *Preprints* 7th conference fire and forest meteorology, 115-122. Ft. Collins, CO, 25-28 April.
- Barber, L.R. and J. Negron. 1992. The deposition of aerially applied foray 48B in a slash pine seed orchard (Abstract). In *Proc. north american forest insect work conference*, 131-132. Denver, CO, 25-28 March, 1991.
- Barber, L.R. and A. Mangini. 1993. Comparison of ground and aerial application spray drift on the Union Camp Corporation southern states loblolly pine seed orchard in Claxton, GA August 20-23, 1991. In *Proc.* 22nd southern forest tree improvement conference, 74-80. Atlanta, GA, 14-17, June.
- Barry, J.W. 1974. Operational and meteorological considerations relative to planning and conducting aerial spray tests with an introduction to the U.S. Army Dugway Proving Ground. In *Proc. 25th annual western forest insect work conference*, 20-26. Salt Lake City, UT, 5-7 March.
- Barry, J.W., R.K. Dumbauld, and H.E. Cramer. 1974. Application of meteorological prediction models to forest spray problems. In *Proc. aerial application of insecticides against forest defoliators (chemicals and microbials)*, 32-71. Missoula, MT, 23-24 April.
- Barry, J.W., M. Tysowsky Jr., G.F. Orr, R.B. Ekblad, R.L. Marsalis, and W.M. Ciesla. 1976. Impaction of zectran particles on spruce budworm larvae A field experiment. In *pesticide spray application*, behavior, and assessment: workshop proceedings, 40-47. Emeryville, CA, 1-2 March 1973.
- Barry, J.W. 1977. Types of aircraft and spray systems. In *Proc. workshop on aerial application of insecticides against forest defoliators*, 6-12. Columbus, OH, 5-6 April.

- Barry, J.W., R.K. Dumbauld, C.R. Bowman, and J.E. Rafferty. 1983. Optimum swath widths and pesticide application rates for selected aircraft and meteorological regimes. In *Extended abstracts 6th conference biometeorology and aerobiology and 16th conference agriculture and forest meteorology*, 227-229. Ft. Collins, CO, 25-28 April.
- Barry, J.W., D. Morris, R. Ekblad, J.E. Rafferty, and R.K. Dumbauld. 1983. Comparison of modeled and measured deposition for the Withlacoochee spray trials. In *Extended abstracts 6th conference biometeorology and aerobiology and 16th conference agriculture and forest meteorology*, 224-226. Ft. Collins, CO, 25-28 April.
- Barry, J.W. 1984. Current pesticide application techniques. In *Proc. 32nd WIFDWC*, 52-54. Taos, NM, 25-28 September.
- Barry, J. 1984. Computer model for pesticide spray deposition (Abstract). In *Proc. 3rd annual computers for agriculture conference and trade fair*, 10. Sacramento, CA, 31 January 1 February.
- Barry, J.W. 1984. Deposition of chemical and biological agents in conifers. In ACS symposium series, chemical and biological controls in forestry, 117-137. Seattle, WA, 20-25 March, 1983.
- Barry, J. 1985. Gurrent status of pesticide usage. In *Proc. thirty-sixth* annual western forest insect work conference, 18. Boulder, CO, 4-7 March.
- Barry, J.W. 1985. Aerial application of *Bacillus thuringiensis* in the western U.S. In *Proc. symposium: Microbial control of spruce budworms and gypsy moths*, 144-147. Windsor Locks, CT, 10-12 April.
- Barry, J.W., K. Dumbauld, and R. Ekblad. 1986. Modeling spray behavior in forests (Abstract). In *Abstracts 7th annual meeting society of environmental toxicology and chemistry*, 141. Alexandria, VA, 2-5 November.
- Barry, J.W. 1989. Management overview program WIND. In Preprint Volume of the 19th conference on agriculture and forest meteorology and the ninth conference on biometeorology and aerobiology, 160-162. Charleston, SC, 7-10 March.

- J.W. Barry and R.B. Ekblad. 1989. Design of deposition studies during Program WIND, 169-172. In Preprint volume of the 19th conference on agriculture and forest meteorology and the ninth conference on biometeorology and aerobiology, 192-195. Boston, MA, 7-10 March.
- Barry, J.W. 1990. Introductory remarks Information programs. In *Proc.* annual gypsy moth review, 79. Ottawa, Ontario, 23-25 October.
- Barry, J.W. 1990. Some thoughts on the evaluation of pesticide tank mixes, simulants, and devices in wind tunnels. In *Proc. annual gypsy moth review*, 41-43. Ottawa, Ontario, 23-25 October.
- Barry, J.W., R.B. Ekblad, M.E. Teske, and P.J. Skyler. 1990. Computer models for aerial delivery of pesticides. In *Proc. annual gypsy moth review*, 24-35. Ottawa, Ontario, 23-25 October.
- Barry, J.W., R.B. Ekblad, M.E. Teske, and P.J. Skyler. 1990. Predictive models for aerial delivery of pesticides. In *Proc. ACAFA symposium and trade show*, 13-24. Winnipeg, Manitoba, 8-12 October.
- Barry, J.W. 1992. Forest pest management pesticide testing and development activities (Abstract). In *Proc. north american forest insect work conference*, 132. Denver, CO, 25-28 March, 1991.
- Barry, J.W. and M.E. Teske. 1992. Predicting and observing fate of sprays released over forests (Abstract). In *Proc. XIX international congress of entomology abstracts*, 564. Beijing, China, 28 June 4 July.
- Barry, J.W., M.E. Teske, and G.L. Sutton. 1992. Drift of *Bacillus thuringiensis* in mountain terrain (Abstract). In *Abstracts 13th annual meeting society of environmental toxicology and chemistry*, 27. Cincinnati, OH, 8-12 November.
- Barry, J.W, M.E. Teske, and H. Thistle. 1993. Computing total accountancy of aerially released material (Poster). In *Abstract book, 14th annual meeting, society of environmental toxicology and chemistry*, 256. Houston, TX, 14-18 November.

- Barry, J.W. 1993. Aerial spray development in the US An overview. In *Programme abstracts, weedworks '93*, 11-1. Rotorua, New Zealand, 19-23 April.
- Barry, J.W. 1993. Aerial application computer simulations and US experiences. In *Programme abstracts*, weedworks '93, 11-2. Rotorua, New Zealand, 19-23 April.
- Barry, J.W., P.J. Skyler, M.E. Teske, H.W. Thistle, and M.Quilter. 1994. Bacillus thuringiensis study summary - Drift, canopy penetration, and soil persistence. In *Proc. of the 1994 annual gypsy moth review*, 74-86. Portland, OR, 30 October-2 November.
- Barry, J.W., M.E. Teske, and H.W. Thistle, Jr. 1995. New aerial herbicide application technology. In *Proc. 16th annual forest vegetation management conference*, 29-54. Sacramento, CA, 10-12 January.
- Bergen, J.D. 1976. Airflow in the forest canopy A review of current research on modeling the momentum balance (Abstract). In *Proc. 4th national conference on fire and forest meteorology*, 82. St. Louis, MO, 16-18 November.
- Bergen, J.D. and R.A. Waite. 1976. First results on a differential interception method of estimating canopy dosage from aerial pesticide applications. In *Proc. 4th national conference on fire and forest meteorology*, 122-128. St. Louis, MO, 16-18 November.
- Bergen, J.D. 1976. Some measurements of the adiabatic wind profile over a tall and irregular forest. In *Proc. 4th national conference on fire and forest meteorology*, 116-121. St. Louis, MO, 16-18 November.
- Bergin, J.D. and A.E. Schneider. 1989. Variation of wind velocity along an upwind orchard edge exposed to uniform flow. In Preprint Volume of the 19th conference on agriculture and forest meteorology and the ninth conference on biometeorology and aerobiology, 176-179. Charleston, SC, 7-10 March.

- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. 1987. Comparisons of AGDISP code predictions with program WIND deposition results. In *Proc. symposium on the aerial application of pesticides in forestry*, 139-143. Ottawa, Canada, 20-22 October.
- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. 1989. Project WIND anemoter tower flyby data reduction. In Preprint Volume of the 19th conference on agriculture and forest meteorology and the ninth conference on biometeorology and aerobiology, 188-191. Charleston, SC, 7-10 March.
- Bousfield, W.E. 1974. Sampling the target insect. In *Proc. aerial application* of insecticides against forest defoliators (chemicals and microbials), 107-111. Missoula, MT, 23-24 April.
- Buffam, P.E. 1985. Spraying for control of the western spruce budworm in the Pacific Northwest. In *Proc. of the CANUSA spruce budworms research symposium*, 379. Bangor, ME, 16-20 September, 1984.
- Bullard, A.T. 1990. The AIPM project An overview. In *Proc. annual gypsy moth review*, 19-22. Ottawa, Ontario, 23-25 October.
- Bustamente, R.L. 1977. Selection and preparation of helicopter landing sites. In *Proc. workshop on aerial application of insecticides against forest defoliators*, 13-16. Columbus, OH, 5-6 April.
- Canutt, P.R. 1974. Monitoring pesticide residues in nontarget organisms. In *Proc. aerial application of insecticides against forest defoliators (chemicals and microbials)*, 112-116. Missoula, MT, 23-24 April.
- Chansler, J.F. 1977. Importance of quality aerial application of insecticides. In *Proc. workshop on aerial application of insecticides against forest defoliators*, 3-5. Columbus, OH, 5-6 April.
- Ciesla, W.M. 1974. Communication and coordination. In *Proc. aerial* application of insecticides against forest defoliators (chemicals and microbials), 117-122. Missoula, MT, 23-24 April.

- Ciesla, W.M. 1990. Managing change: Some thoughts for resource specialists trying to survive in a dynamic world. In *Proc. ACAFA symposium and trade show*, 3-7. Winnipeg, Manitoba, 8-12 October.
- Crabbe, R.S., J.W. Barry, A.J. Bilanin, C.R. Bowman, J.J.C. Picot, D. Weihs, and R.E. Mickle. 1987. Session V Modelling of spray cloud behaviour (panel discussion). In *Proc. symposium on the aerial application of pesticides in forestry*, 189-190. Ottawa, Canada, 20-22 October.
- Dubois, N.R. 1985. Recent field studies on the use of *Bacillus thuringiensis* to control the gypsy moth (*lymantria dispar L.*). In *Proc. symposium:* microbial control of spruce budworms and gypsy moths, 83-85. Windsor Locks, CT, 10-12 April, 1984.
- Dubois, N.R. 1985. Selection of new more potent strains of *Bacillus* thuringiensis for use against gypsy moth and spruce budworm. In *Proc.* symposium: microbial control of spruce budworms and gypsy moths, 99-102. Windsor Locks, CT, 10-12 April, 1984.
- Dubois, N.R., K. Mierzejewski, and R. Reardon. 1990. Deposit analysis of the 1989 aerial application of foray 48B against the gypsy moth in the George Washington National Forest. In *Proc. annual gypsy moth review*, 36-40. Ottawa, Ontario, 23-25 October.
- Dulmage, H.T., C.C. Beegle, and N.R. Dubois. 1985. Bioassay of formulations of *Bacillus thuringiensis* for use in forestry: Panel discussion of the role of the bioassay in standardizing formulations of *B. thuringiensis*. In *Proc. symposium: Microbial control of spruce budworms and gypsy moths*, 161-169. Windsor Locks, CT, 10-12 April, 1984.
- Ekblad, R.B. 1976. Meteorology and pesticide application. In *Proc. 4th* national conference on fire and forest meteorology, 101-108. St. Louis, MO, 16-18 November.
- Ekblad, R.B. and J.W. Barry. 1983. A review of progress in technology of aerial application of pesticides to forests. In *Preprints 7th conference fire and forest meteorology*. Ft. Collins, CO, 25-28 April.

- Ekblad, R.B., M.E. Teske, and J.W. Barry. 1990. Agricultural dispersal (AGDISP) A predictive model for aircraft spraying (Poster). In *Proc. ACAFA symposium and trade show*, 204-208. Winnipeg, Manitoba, 8-12 October.
- Ellis, T.G. 1977. Inform and involve. In *Proc. workshop on aerial application of insecticides against forest defoliators*, 73-77. Columbus, OH, 5-6 April.
- Flake, H.F. 1974. Mixing and formulation of chemicals. In *Proc. aerial* application of insecticides against forest defoliators (chemicals and microbials), 15-18. Missoula, MT, 23-24 April.
- Fosberg, M.A. and L.M. Lanham. 1983. Above-canopy dispersion rates in nighttime downslope flow. In *Preprints 7th conference fire and forest meteorology*, 105-110. Ft. Collins, CO, 25-28 April.
- Green, G.W., A.M. Drummond, M. Pelletier, J.W. Barry, R.S. Crabbe, and H.J. Irving. 1987. Session VII wrap-up panel discussion. In *Proc. symposium on the aerial application of pesticides in forestry*, 233-249. Ottawa, Canada, 20-22 October.
- Grim, B.R. and J.W. Barry. 1976. A canopy penetration model for aerially disseminated insecticide spray released above coniferous forests. In *Proc. 4th national conference on fire and forest meteorology*, 109-115. St. Louis, MO, 16-18 November.
- Hadfield, J.S. 1992. The development of aerial application technologies for western spruce budworm and douglas-fir tussock moths control programs (Abstract). In *Proc. north american forest insect work conference*, 133. Denver, CO, 25-28 March, 1991.
- Hamel, D. 1990. Use of pesticides in United States forestry (Abstract). In Abstracts 11th annual meeting society of environmental toxicology and chemistry, 76. Arlington, VA, 11-15 November.
- Jasumback, T. 1974. Spray block marking and aircraft guidance. In *Proc.* aerial application of insecticides against forest defoliators (chemicals and microbials), 81-92. Missoula, MT, 23-24 April.

- Jasumback, T. 1974. Calibration of spray system. In *Proc. aerial application* of insecticides against forest defoliators (chemicals and microbials), 123-125. Missoula, MT, 23-24 April.
- Lewis, F.B. 1977. Mixing and applying microbials. In *Proc. workshop on aerial application of insecticides against forest defoliators*, 24-29. Columbus, OH, 5-6 April.
- Maksymiuk, B. 1971. Kinetics and physics of pesticidal aerial sprays.

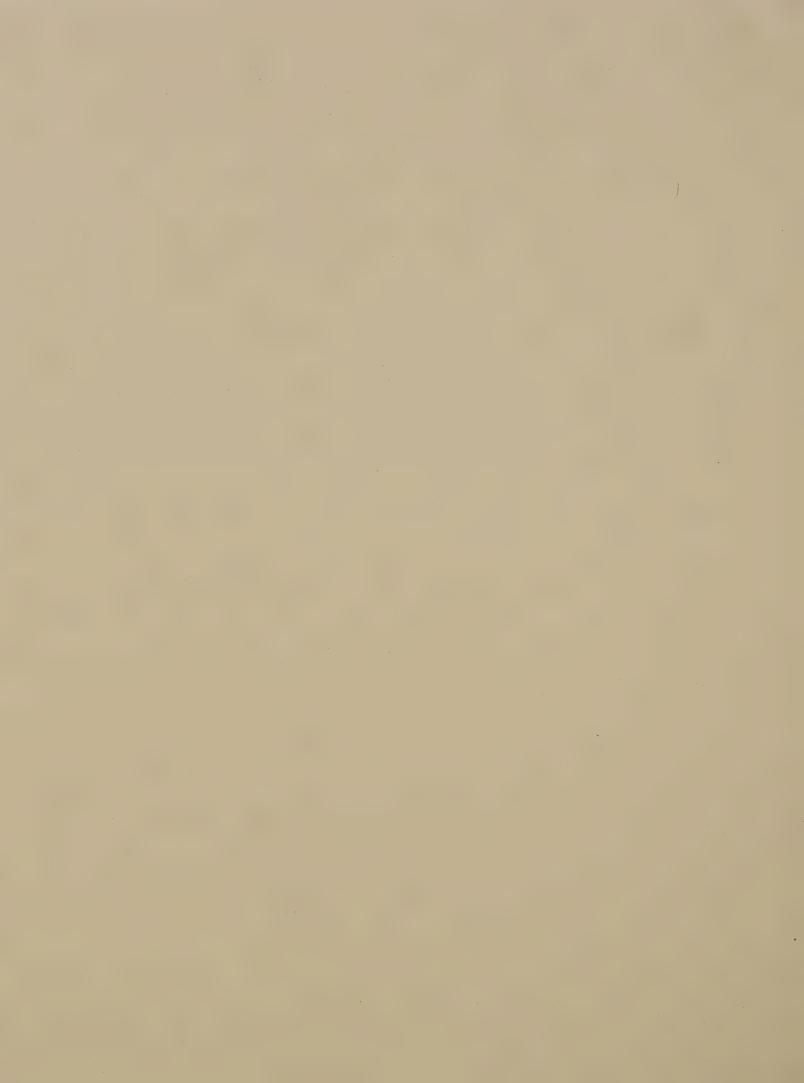
  Reprint from 1971 proceedings short course for pesticide applicators 
  Pesticides, pest control and safety on forest range lands, 171-179. Corvallis, OR.
- Markin, G.P. 1974. Selection of aircraft. In *Proc. aerial application of insecticides against forest defoliators (chemicals and microbials)*, 7-14. Missoula, MT, 23-24 April.
- McCreery, L., I. Millers, and D. Souto. 1985. Comparison of Bt formulations against the spruce budworm. In *Proc. symposium: Microbial control of spruce budworms and gypsy moths*, 23-27. Windsor Locks, CT, 10-12 April, 1984.
- McMahon, C.K. 1992. Herbicides and forest ecosystems Approaches to risk communication. In *Proc. 45th annual meeting southern weed science society*, 154-170. Little Rock, AR, 20-22 January.
- McMahon, C.K., J.H. Miller, and D.F. Thomas. 1994. The role of low impact herbicide treatments in ecosystem management. In *Proc. of the national silviculture workshop Silviculture: From the cradle of forestry to ecosystem management*, 242-251. Henderson, NC, 1-4 November 1993.
- Michael, J.L. and D.G. Neary. 1990. Herbicide dissipation studies in southern forest ecosystems (Abstract). In *Abstracts 11th annual meeting society of environmental toxicology and chemistry*, 76. Arlington, VA, 11-15 November.

- Mierzejewski, K., J. Bryant, R. Reardon, and W. Yendol. 1990. The swath kit: A tool for spray aircraft characterization. In *Proc. annual gypsy moth review*, 213-216. Ottawa, Ontario, 23-25 October.
- Mierzejewski, K., N. Dubois, W. McLane, R. Reardon, T. Roland, M. McManus, and W. Yendol. 1990. Influence on dose, volume and deposit on the field efficacy of Bt against gypsy moth (1988 & 1990 field projects). In *Proc. annual gypsy moth review*, 75-78. Ottawa, Ontario, 23-25 October.
- Millers, I. 1977. Spray block marking and aircraft guidance. In *Proc.* workshop on aerial application of insecticides against forest defoliators, 68-71. Columbus, OH, 5-6 April.
- Neary, D.G., P.B. Bush, and J.L. Michael. 1990. Fate of pesticides in southern forests A decade of progress (Abstract). In *Abstracts 11th annual meeting society of environmental toxicology and chemistry*, 77. Arlington, VA, 11-15 November.
- Neisess, J. 1974. Spray deposit assessment. In *Proc. aerial application of insecticides against forest defoliators (chemicals and microbials)*, 72-80. Missoula, MT, 23-24 April.
- Newlon, W.A. 1974. Inform and involve. In *Proc. aerial application of insecticides against forest defoliators (chemicals and microbials)*, 100-106. Missoula, MT, 23-24 April.
- Newton, W.E., B.S. Grim, J.W. Barry, and R.B. Ekblad. 1989. Deposition studies in an almond orchard. In *Preprint volume of the 19th conference on agriculture and forest meteorology and the ninth conference on biometeorology and aerobiology*, 192-195. Boston, MA, 7-10 March.
- Podgwaite, J., R. Reardon, and H. Hubbard. 1990. Status of gypsy moth NPV, gypchek, in USA. In *Proc. annual gypsy moth review*, 192. Ottawa, Ontario, 23-25 October.
- Reardon, R. 1990. Non-target studies within the AIPM project. In *Proc.* annual gypsy moth review, 90-91. Ottawa, Ontario, 23-25 October.

- Reardon, R. 1990. Appalachian integrated pest management (AIPM) sponsored cooperative methods improvement and pilot projects 1989-1990. In *Proc.* annual gypsy moth review, 23. Ottawa, Ontario, 23-25 October.
- Ryan, B.C. 1983. Comparisons of estimates of surface wind in mountainous terrain based on upper-level flow with estimates using nearby surface observations. In *Preprints 7th conference fire and forest meteorology*, 13-17. Ft. Collins, CO, 25-28 April.
- Schneeberger, N.F. 1985. Overall aspects of *B.t.* in Forest Service cooperative gypsy moth suppression projects. In *Proc. symposium: Microbial control of spruce budworms and gypsy moths*, 35-37. Windsor Locks, CT, 10-12 April, 1984.
- Teske, M.E., D.B. Twardus, and R.B. Ekblad. 1990. The evaluation of swath width for gypsy moth suppression. In *Extended abstracts 4th annual conference ILASS-AMERICAS institute of liquid atomization and spray systems*, 174-178. Hartford, CT, 21-23 May.
- Teske, M.E., T.B. Curbishley, J.W. Barry, and R.B. Ekblad. 1990. FSCBG: An aerial spray dispersion model. In *Proc. ACAFA symposium and trade show*, 176-180. Winnipeg, Manitoba, 8-12 October.
- Teske, M.E., T.B. Curbishley, J.W. Barry, and R.B. Ekblad. 1990. FSCBG: An aerial spray dispersion model for predicting the fate of released material behind aircraft (Abstract). In *Abstracts 11th annual meeting society of environmental toxicology and chemistry*, 77. Arlington, VA, 11-15 November.
- Teske, M.E., T.B. Curbishley, J.W. Barry, and R.B. Ekblad. 1990. FSCBG The Forest Service aerial spray dispersion complete-wake model. In *Proc.* 2nd international symposium on advanced technology in natural resources management, 666-675. Washington, DC, 12-15 November.
- Teske, M.E., P.J. Skyler, and J.W. Barry. 1991. A drop size distribution data base for forest and agricultural spraying: Potential for extended application. In *Proc. 5th international conference on liquid atomization and spray systems, ICLASS-91*, 325-332. Gaithersburg, MD, 15-18 July.

- Thistle, H.W. Jr., J.W. Barry, and M.E. Teske. 1993. Development and validation of the FSCBG model for the simulation of spray drift. In *Tome 1*, international symposium on pesticides application, 235-245. Strasbourg, France, 22-24 September.
- Thistle, H.W. and J.W. Barry. 1994. Testing and demonstration of DGPS aircraft guidance and recording systems for use in forestry in complex terrain Preliminary report. In *Proc. of the 1994 annual gypsy moth review*, 48-57. Portland, OR, 30 October-2 November.
- Touma, J.S., W.M. Cox, and H. Thistle. 1993. Statistical analysis of the performance of dense gas dispersion models. In *Proc. of an international specialty conference the role of meteorology in managing the environment in the 90s*, 139-150. Scottsdale, AZ, January.
- Twardus, D.B. and H.A. Machesky. 1990. The treatment monitoring data base for gypsy moth suppression. In *Proc. annual gypsy moth review*, 217-221. Ottawa, Ontario, 23-25 October.
- Weeks, J.A. and J.W. Barry. 1983. An aerial spray planning and analysis system. Extended abstracts of 6th conference biometeorology and aerobiology and 16th conference agriculture and forest meteorology, 218-221. Ft. Collins, CO, 25-28 April.
- Whyte, L. and J.W. Barry. 1977. Spray deposit assessment. In *Proc. workshop on aerial application of insecticides against forest defoliators*, 35-50. Columbus, OH, 5-6 April.
- Yang, X., D.R. Miller, and J.J. Witcosky. 1994. Characterization of hardwood forest canopies in the eastern United States. In *Preprint volume*, 21st conference on agriculture and forest meteorology of the american meteorological society, 130-133. San Diego, CA, 7-11 March 1993.

# FPM (DAVIS) AND MTDC CONTRACTOR REPORTS AND PAPERS



## FPM (DAVIS) AND MTDC CONTRACTOR REPORTS AND PAPERS

- Allwine, K.J., X. Bian, and C.D. Whiteman. 1993. User's guide to VALDRIFT 1.0 A valley atmospheric dispersion model (DRAFT). Prepared by Pacific Northwest Laboratory for USDA Forest Service, Missoula Technology & Development Center, Missoula, MT.
- Allwine, K.J., X. Bian, and C.D. Whiteman. 1995. VALDRIFT 1.0 A valley atmospheric dispersion model with deposition. PNL-10586/UC-402. Prepared by Pacific Northwest Laboratory (operated for the U.S. Department of Energy by Battelle Memorial Institute) under Contract DE-AC06-76RLO 1830 for the USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Banaugh, R.P. 1976. Optimum spray calculation. Prepared under Contract 26-3651 for USDA Forest Service, Missoula Equipment Development Center, Missoula, MT.
- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. Undated. USDA Forest Service aerial spray dispersion models AGDISP and FSCBG I: Model formulation. Prepared by Continuum Dynamics, Inc., Princeton, NJ.
- Bilanin, A.J. 1986. Status of field study of spray aircraft wake with convective surface winds in hilly terrain. Prepared by Continuum Dynamics, Inc. for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. 1987. Comparisons of AGDISP code predictions with Program WIND deposition results. Presented at the *National research council symposium on the aerial application of pesticides in forestry*. Ottawa, Canada.
- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. 1989. Helicopter spray modeling and experimental validation. (C.D.I. Technical Note No. 89-04.) Presented at *ILASS-AMERICAS 3rd annual conference on liquid atomization and spray systems*. Irvine, CA.

- Bilanin, A.J., M.E. Teske, J.W. Barry, and R.B. Ekblad. 1989. Project WIND anemometer tower flyby data reduction. Presented at American meteorological society 19th conference on agricultural and forest meteorology. Charleston, SC.
- Continuum Dynamics, Inc. Undated. SWA+H (mod 2) spray width for airplanes and helicopters SWA+H computer code user's manual. M14872. Prepared for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Continuum Dynamics, Inc. 1986. Field study of interaction of spray aircraft wake with convective surface winds in hilly terrain. C.D.I. Report No. 86-5. Prepared under Contract No. 53-0343-6-00874 for USDA Forest Service, Missoula, MT.
- Continuum Dynamics, Inc. 1989. Work plan for the Heather Seed Orchard deposition study in support of FSCBG modeling comparisons. C.D.I. Technical Note No. 89-07. Prepared under Contract No. 53-04H1-9-0510 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Continuum Dynamics, Inc. 1989. Text matrix calculations for the Heather Seed Orchard deposition study in support of FSCBG modeling comparisons. C.D.I. Technical Note No. 89-09. Prepared under Contract No. 53-04H1-9-0510 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Curbishley, T.B., M.E. Teske, and J.W. Barry. 1991. Spray dispersion visualization using FSCBG 4.0. Presented at ASAE 1991 international summer meeting. Albuquerque, NM.
- Dennis, R. 1969. Particle size assessment of liquid and solid forest pest insecticides Final report. GCA-TR-69-7-G. Prepared by GCA Corporation under Contract No. 62-548-69 for USDA Forest Service, Missoula Equipment Development Center, Missoula, MT.
- Dumbauld, R.K., J.E. Rafferty, and H.E. Cramer. 1976. Dispersion-deposition from aerial spray releases. Presented at American meteorological society 3rd symposium on atmospheric turbulence, diffusion, and air quality. Raleigh, NC.

- Dumbauld, R.K., J.E. Rafferty, and J.D. Bergen. 1979. Mesoscale and dispersion modeling solutions of insecticide drift for the New Brunswick spray scenario. Presented at the *conference on long-distance drift of insecticides from aerial sprays in forest operations*. Fredericton, New Brunswick, Canada.
- Dumbauld, R.K., C.R. Bowman, and J.E. Rafferty. 1980. Draft Optimum swath widths and application rates for selected aircraft and meteorological regimes. TR-80-319-01. Prepared under Contract No. 53-9158-9-6260 by H.E. Cramer Co., Inc. for USDA Forest Service, Methods Application Group, Davis, CA.
- Dumbauld, R.K. 1981. Aerial spray application and long-term drift. In *Proc.* of the workshop on parameterization of mixed layered diffusion. Las Cruces, NM, 20-23 October.
- Geary, H.V., C.R. Bowman, J.E. Rafferty, and R.K. Dumbauld. 1987. Application of the FSCBG version 2 aerial spray model in forestry. Presented at the *national research council symposium on the aerial application of pesticides in forestry*. Ottawa, Canada.
- Hauser, R.K., R.B. Ekblad, and J.W. Barry. 1990. Measurement of meteorological conditions during the EMCOT spray trials. Prepared for USDA Forest Service, Missoula Technology Development Center, Missoula, MT.
- Rafferty, J.E. 1983. Review of the AGLINE code compatibility with FSCBG code requirements. TR-83-331-01. Prepared by H.E. Cramer Co., Inc. under Purchase Order No. 43-0343-2-1312 for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Rafferty, J.E. and J.F. Bowers. 1989. Comparison of FSCBG2 and FSCBG3 aerial spray model predictions with field measurements. DPG-FR-90-001. Prepared by U.S. Army Dugway Proving Ground for USDA Forest Service, Forest Pest Management, Davis, CA.

- Teske, M.E. and A.J. Bilanin. Undated. Numerical simulation of the deposition of aerially released materials. Prepared by Continuum Dynamics, Inc., Princeton, NJ.
- Teske, M.E. 1987. Running the Forest Service dispersal code AGDISP on a personal computer. C.D.I. Technical Note 87-01. Prepared by Continuum Dynamics, Inc. under Purchase Order No. 40-0343-7-2005 for USDA Forest Service, Equipment Development Center, Missoula, MT.
- Teske, M.E., J. Barry, and R. Ekblad. 1987. Utilization of computer technology to plan a forest spray mission. Presented at *forestry workshop*. Bangor, ME.
- Teske, M.E., J. Barry, and R. Ekblad. 1987. A computer simulation of deposition and drift of aerially applied material. Presented at *forestry workshop*. Bangor, ME.
- Teske, M.E. 1989. AGDISP comparisons with four field deposition studies. C.D.I. Technical Note 89-05. Prepared by Continuum Dynamics, Inc. under Purchase Order No. 40-91S8-7-0721 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1990. Dropsize user manual. C.D.I. Technical Note No. 90-10. Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-9-00076 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E. 1990. AGDISP user manual MOD 6.0. C.D.I. Technical Note No. 90-16. Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-9-00076 for USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.
- Teske, M.E., D.B. Twardus, and R.B. Ekblad. 1990. The evaluation of swath width for gypsy moth suppression. Presented at *ILASS-AMERICAS institute* of liquid atomization and spray systems 4th annual conference. Hartford, CT.

- Teske, M.E., T.B. Curbishley, J.W. Barry, and R.B. Ekblad. 1990. FSCBG: An aerial spray dispersion model for predicting the fate of released material behind aircraft. Presented at symposium on pesticides in forest management, 11th annual meeting of the society of environmental toxicology and chemistry. Arlington, VA.
- Teske, M.E., T.B. Curbishley, J.W. Barry and R.B. Ekblad. 1990. FSCBG The Forest Service aerial spray dispersion complete-wake model. Presented at 2nd international symposium on advanced technology in natural resources management. Washington, D.C.
- Teske, M.E. 1991. USDA Forest Service aerial spray models AGDISP and FSCBG 1991 model status report. (Technical Memorandum No. 91-11.) Presented at *national spray model advisory committee*. Blacksburg, VA.
- Teske, M.E. 1991. ASCAS version 4.0 user documentation. C.D.I. Technical Note No. 91-14. Prepared by Continuum Dynamics, Inc. under Contract No. 53-0343-1-00153 for USDA Forest Service, Forest Pest Management, Davis, CA.
- Teske, M.E., P.J. Skyler, and J.W. Barry. 1991. A drop size distribution data base for forest and agricultural spraying: Potential for extended application. Presented at 5th international conference on liquid atomization and spray systems, ICLASS-91. Gaithersburg, MD.
- Teske, M.E., J.W. Barry, and R.B. Ekblad. 1991. Preliminary sensitivity study of aerial application inputs for FSCBG 4.0. Presented at ASAE 1991 international summer meeting. Albuquerque, NM.
- Teske, M.E. 1992. An interpretation of the DC-3 swath width field trials. C.D.I. Technical Note No. 92-06. Prepared under Contract No. 53-0343-9-00076 by Continuum Dynamics, Inc. for USDA Forest Service, Forest Pest Management, Davis, CA and Asheville, NC.
- Teske, M.E. and J.W. Barry. 1992. Correlation of the USDA Forest Service drop size distribution data base. Presented at *ILASS-Americas 92 fifth annual conference on liquid atomization and spray systems*. San Ramon, CA.

- Teske, M.E. 1993. Discussion (Statistical comparisons of the AGDISP model with deposit data, (Duan et al, 1992), Atmospheric Environment 26A:1635-1642). Atmospheric Environment 27A(5):801-802.
- Teske, M.E., A.J. Bilanin, and J.W. Barry. 1993. Drop size scaling analysis of non-newtonian fluids. Presented at *ILASS-Americas 93*, sixth annual conference on liquid atomization and spray systems. Worchester, MA.
- Teske, M.E., J.W. Barry, and B.S. Grim. 1993. Validation of the aerial spray dispersion model FSCBG. Continuum Dynamics, Inc., Princeton, NJ.
- Teske, M.E. and A.J. Bilanin. 1994. Drop size scaling analysis of non-Newtonian fluids. *Atomization and Sprays*, Vol. 4, pp. 473-483.
- Teske, M.E., A.Z. MacNichol, and J.W. Barry. 1994. USDA Forest Service spread factor technology database. In *Pesticide Formulations and Application Systems: 14th Volume, ASTM STP 1234*, eds. F.R. Hall, P.D. Berger, and H.M. Collins. Philadelphia: American Society for Testing and Materials.
- Teske, M.E., J.W. Barry, and H.W. Thistle, Jr. 1994. FSCBG predictions coupled to GPS/GIS aircraft tracking. Presented at 15th symposium on pesticide formulations and application systems. Phoenix, AZ.
- Teske, M.E., J.W. Barry, and B. Richardson. 1994. Past, current, and future collaboration between the USDA Forest Service, Pesticide Application Technology Group, Forest Pest Management, Davis, CA and the New Zealand Forest Research Institute, Plant Protection Chemistry Group, Rotorua, New Zealand. Program Briefing Paper. Prepared for Chairman of the Board, NZ Forest Research Institute Ltd. and Chief, USDA Forest Service.
- Teske, M.E. 1995. An introduction to aerial spray modeling with FSCBG. Presented at the 1995 national meeting of the American mosquito control association, aerosol cloud dynamics symposium. Portland, OR.

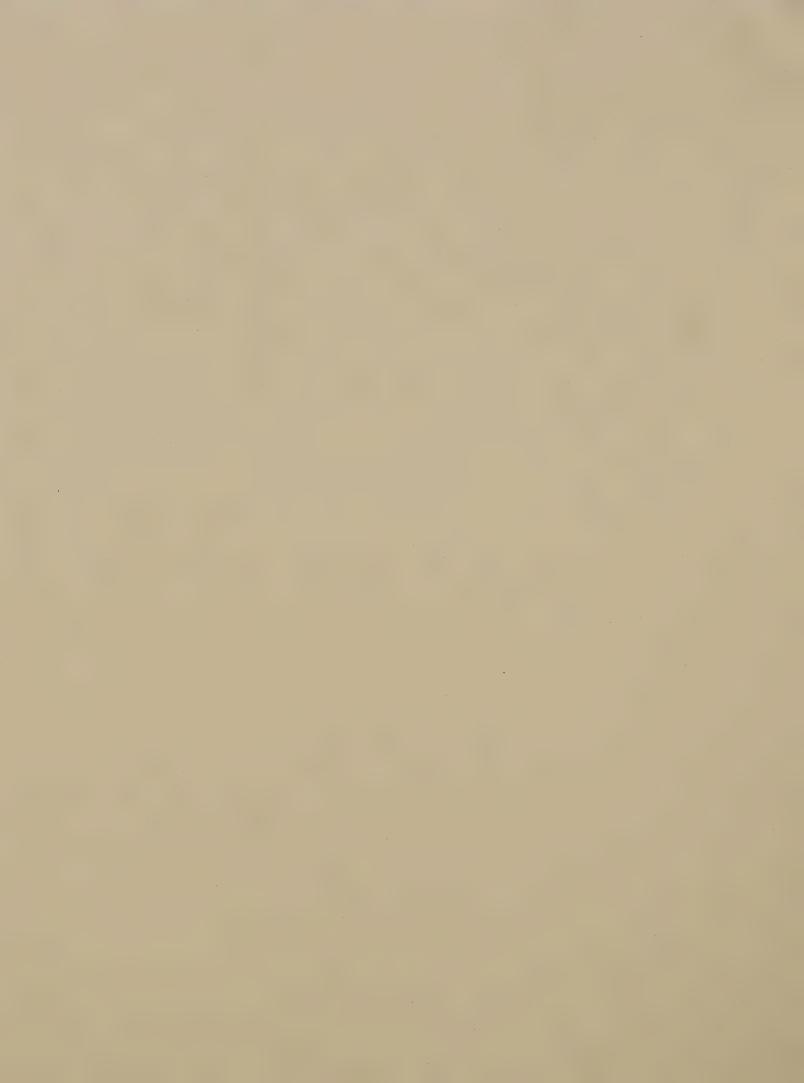
- Thistle Jr., H.W., J.W. Barry, and M.E. Teske. 1993. Computing total accountancy of aerially released material. Presented at 14th annual meeting, society of environmental toxicology and chemistry. Houston, TX.
- Wang, Y. 1989. Turbulence structure, momentum and heat transport in the edge of broad leaf tree stands. Technical report contributing to: Program WIND. Sponsored by U.S. Forest Service Washington Office, Forest Pest Management, Rocky Mountain Forest and Range Experiment Station under Cooperative Agreement 28-C7-412 and U.S. Army Research Office under Grant Number DDA 103-86-K-0081.

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U.S. ARMY	AND U.S.	ARMY CO	ONTRACTO	R REPORT	S AND PAPERS



## U.S. ARMY AND U.S. ARMY CONTRACTOR REPORTS AND PAPERS

- Anonymous. 1963. Jungle canopy penetration Final report, vol. 1, diffusion measurements. Prepared by The Bendix Corporation under Contract No. DA-42-007-530 for the Department of the Army.
- Anonymous. 1971. Model estimates of the deposition of aerial spray on a forest canopy. Technical Note. Prepared by GCA Corporation under Contract No. DAAD09-71-C-0003 for U.S. Army Dugway Proving Ground, Dugway, UT.
- Anonymous. 1973. Model estimates of deposition and concentration for the 1973 field test of insecticides on pine butterfly larval population in the Bitterroot national forest. Prepared under contract by H.E. Cramer Co. for U.S. Army Dugway Proving Ground, Dugway, UT.
- Anonymous. 1990. Data report for the Forest Service C-130 spray test, Jornada spray test area, 23-27 February, 1990. PSL-90/32. Prepared by New Mexico State University, Physical Science Laboratory under Contract No. DAAD-07-86-C-0034, WAO 90-2.3-1 for U.S. Army Atmospheric Sciences Laboratory, White Sands Missile Range, NM.
- Barry, J.W. 1972. Characterization of the naturally occurring particulates in the marine atmosphere Test plan. DTC Project No. DTC-TP-70-00C. Desert Test Center, Fort Douglas, UT.
- Barry, J.W. and G.M. Blake. 1972. Feasibility study of a dry-liquid insecticide employed in a coniferous forested environment. DPG Document No. DTC-TN-70-10-(III). U.S. Army Dugway Proving Ground, Dugway, UT.
- Barry, J.W., M. Tysowsky, Jr., G.F. Orr, R.B. Ekblad, R.L. Marsalis, and W.M. Ciesla. 1973. A field experiment on the impaction of zectran particles on spruce budworm larvae Technical report. DPG Project No. DTC-TR-73-545. Deseret Test Center, Fort Douglas, UT; USDA Forest Service, Region 1, Division of State and Private Forestry; and Missoula Equipment Development Center, Missoula, MT.

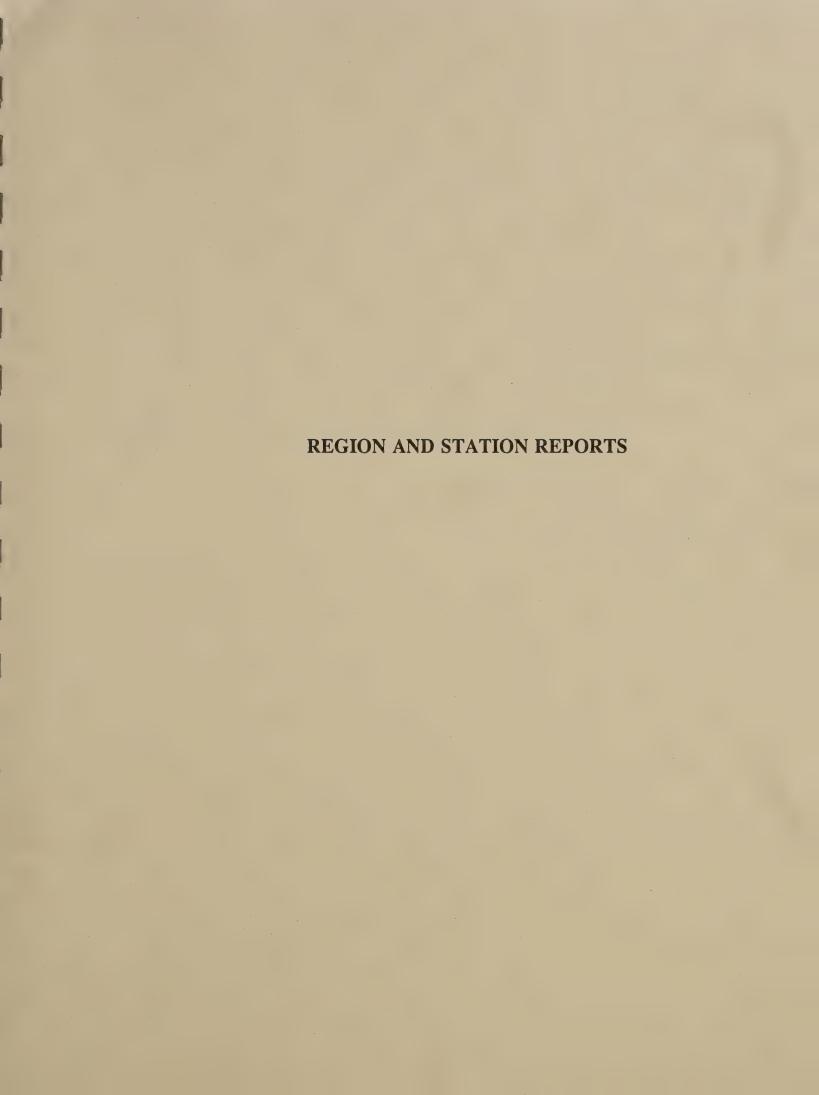
- Barry, J.W., C.O. Eckard, P. Cheeseman, and H.E. Cramer. 1974. Characterization of DC-7B aerial spray system. DPG Document No. DPG-TP-C980A. U.S. Army Dugway Proving Ground, Dugway, UT.
- Barry, J.W. and L.A. Griffiths. 1975. Distribution of particles (by number and size) in Micro-Cel E and Hi Sil 233 dry liquids Data report. DPG Document No. DPG-DR-C621A. U.S. Army Dugway Proving Ground, Dugway, UT.
- Barry, J.W., G.L. Sutton, B.S. Grim, R.B. Ekblad, W.M. Ciesla, and J.E. Dewey. 1975. Aerial spray evaluation, pine butterfly test Bitterroot national forest, Montana, 1973 Data report. DPG Document No. DPG-DR-C620A. U.S. Army Dugway Proving Ground, Dugway, UT; U.S. Department of Agriculture, Forest Service, Region 1, Division of State and Private Forestry and Missoula Equipment Development Center, Missoula, MT.
- Barry, J.W. and R. Ekblad. 1975. Action plan for meteorological and spray assessment support of pilot control project of carbaryl, trichlorfom, and *Bacillus thuringiensis* against western spruce budworm, Beaverhead and Gallatin national forests, Montana. U.S. Army, Dugway Proving Ground, Dugway, UT and USDA Forest Service, Missoula Equipment and Development Center, Missoula, MT.
- Bjorklund, J.R., C.R. Bowman, and G.C. Dodd. 1987. User manual for the FSCBG aircraft spray and dispersion model version 2.0. TR-87-164-01. Prepared by Andrulis Research Corporation and H.E. Cramer Company, Inc. under Subcontract 0001, Contract Number DAAD10-81-C-0001 for U.S. Army Dugway Proving Ground, Dugway, UT.
- Bowers, J.F. and J.M. White. 1989. Test design and initial results for the program WIND forest-interface dispersion experiment Technical report. DPG Document No. DPG/TA-90/005. U.S. Army Dugway Proving Ground, Dugway, UT.
- Bowers, J.F., J.E. Rafferty, and M.P. Bleiweiss. 1989. Forest-interface dispersion study: Test design and initial results. In *Preprints 19th conference agricultural and forest meteorology and ninth conference biometeorology and aerobiology*, 207-210. Charleston, SC, 7-10 March.

- Bowman, C.R. 1983. Investigation of mesoscale model initialization techniques. TR-83-349-01. Prepared by H.E. Cramer Company, Inc. under Contract No. DAAD07-81-D-0017 for U.S. Army Atmospheric Sciences Laboratory, White Sands Missile Range, NM.
- Boyle, D.G., J.W. Barry, C.O. Eckard, W.T. Taylor, W.C. McIntyre, R.K. Dumbauld, and H.E. Cramer. 1975. DC-7B aircraft spray system for large-area insect control. DPG Document No. DPG-DR-C980A. U.S. Army Dugway Proving Ground, Dugway, UT.
- Butterfield, J.E. and M.A. Alliman. 1985. Operations plan for DoD US Army USDA Forest Service cooperative field study, project WIND (winds in non-uniform domain). U.S. Army Atmospheric Sciences Laboratory, White Sands Missile Range, NM.
- Coburn, J.F. Jr. 1964. The automatic spot counter and sizer A report on the techniques, principles, and results of counting and sizing. Summary Report 64-10. U.S. Army Dugway Proving Ground, Dugway, UT.
- Cramer, H.E. and R.K. Dumbauld. 1968. Experimental designs for dosage prediction in CB field tests Final Report. GCA Technical Report No. 68-17-G. Prepared by GCA Corporation under Contract No. DA-42-007-AMC-276(R) for U.S. Army Dugway Proving Ground, Dugway, UT.
- Dumbauld, R.K., J.E. Rafferty, and H.E. Cramer. Undated. Dispersion-deposition from aerial spray releases. Prepared by H.E. Cramer Company, Inc. under Contract No. DAAD09-74-C-0005 for U.S. Army Dugway Proving Ground, Dugway, UT.
- Dumbauld, R.K., H.E. Cramer, and J.W. Barry. 1975. Application of meteorological prediction models to forest spray problems. DPG Document No. DPG-TR-M935P. Prepared by H.E. Cramer Company, Inc. under Contract No. DAAD09-74-C-0005 for U.S. Army Dugway Proving Ground, Dugway, UT.
- Dumbauld, R.K. 1981. Aerial spray application and long-term drift. In *Proc. of the workshop on parameterization of mixed layered diffusion*. Las Cruces, NM, 20-23 October.

- Dumbauld, R.K. and C.R. Bowman. 1984. A functional methodology for characterizing windspeed and turbulence profiles within and above canopies. ASL-CR-7-84-91S-1. Prepared by H.E. Cramer Company, Inc. under Contract No. 53-91S (Modification No. 3) for U.S. Army Electronic Research and Development Command, Atmospheric Sciences Laboratory, White Sands Missile Range, NM.
- Frese, J.E. and A.T. Hereim. 1970. Downwind diffusion from aerial line source releases at Dugway Proving Ground Summary report. DTC Project No. B502. Desert Test Center, Fort Douglas, UT.
- Gay, B.P. and D.P. Segers. 1993. Specialized laboratory support Task TA-31 Droplet evaporation (Data Report). SRI-APC-93-597-6819.7. Prepared by Southern Research Institute under Contract No. DAAD09-89-D-0005 for U.S. Army Dugway Proving Ground, Dugway, UT.
- Geary, H.V., C.R. Bowman, J.E. Rafferty, and R.K. Dumbauld. 1987. Application of the FSCBG version 2 aerial spray model in forestry. Presented at national research council symposium on the aerial application of pesticides in forestry. Ottawa, Canada.
- Grim, B.S. and J.W. Barry. 1975. A canopy penetration model for aerially disseminated insecticide spray released above coniferous forests Final report. DPG Document No. DPG-FR-C625A. U.S. Army Dugway Proving Ground, Dugway, UT and U.S. Department of Agriculture, Forest Service, Missoula Equipment Development Center, Missoula, MT.
- Kays, M.D. 1987. Phase IV operations plan Program WIND. STC Report 2168. Prepared by Science and Technology Corporation under Contract No. DAAD07-86-C-0066, Task 4 for U.S. Army Atmospheric Sciences Laboratory, White Sands Missile Range, NM.
- Mahler, D.S. 1983. Measurement of droplet size distribution in insecticide and herbicide sprays Phase I final report. Prepared by KLD Associates, Inc. under Contract No. DAMD17-82-C-2042 for U.S. Army Medical Research and Development Command, Fort Detrick, Frederick, MD.

- Newton, W.E. 1988. Protection from aerial spray afforded troops by a deciduous canopy Technical report. DPG Document No. DPG/TA-88/13. U.S. Army Dugway Proving Ground, Dugway, UT.
- Rafferty, J.E., J.M. White, J.F. Bowers, and J.W. Barry. 1988. Comparison of Program WIND phase III deposition measurements with FSCBG2 model predictions. DPG Document No. DPG/TA-89-007. U.S. Army Dugway Proving Ground, Dugway, UT.
- Rafferty, J.E., J.M. White, J.F. Bowers, and R.K. Dumbauld. 1989. Forest spray dispersion study: Comparison of measured deposition with FSCBG2 model predictions. In *Preprints 19th conference agricultural and forest meteorology and 9th conference biometeorology and aerobiology*, 200-203. Charleston, SC, 7-10 March.
- Rafferty, J.E., B.S. Grim, and J.F. Bowers. 1992. A canopy penetration experiment in gambel oak. In abstracts 13th annual meeting society of environmental toxicology and chemistry, 27. Cincinnati, OH, 8-12.
- Rafferty, J.E. 1993. Literature survey of drop penetration through forest canopies: An addendum to volume XVII meteorology source book. DPG Report No. DPG/JCPD-93/010. U.S. Army Dugway Proving Ground, Dugway, UT.
- Rafferty, J.E. and J.F. Bowers. 1993. Comparison of FSCBG spray model predictions with field measurements. *Environmental Toxicology and Chemistry*, Vol. 12(3):465-480.
- Rafferty, J. 1994. FSCBG analysis of the 1990 Oregon seed orchard trials. Technical Note 94-90-1. U.S. Army Dugway Proving Ground, Dugway, UT.
- Sadeh, W.Z., F.W. Law, W.E. Marlatt, D.G. Fox, D.L. Dietrich, and R. Cionco. 1982. A survey of micrometeorological parameters within a forest canopy at Fort Polk, Louisiana. ASL-CR-82-0100-1. U.S. Army Electronics Research and Development Command, Atmospheric Sciences Laboratory, White Sands Missile Range, NM.

- Scuderi, J.A., J.A. Boegler, B.M. Earlewine, F.L. Moon, J.W. Barry, R.B. Ekblad, and W.M. Ciesla. 1975. Meteorological data supplement, 1975 spruce budworm pilot test, Gallatin and Beaverhead national forests Data report. DPG Document No. DPG-DR-C630A. U.S. Army Dugway Proving Ground, Dugway, UT and U.S. Department of Agriculture, Forest Service, Missoula Equipment Development Center, Missoula, MT.
- Smith, C.T. (ed.). 1971. Army aids Forest Service on spruce tree budworm control. In Army Research and Development 12(5):48.
- Stewart, N.C. 1966. ASCAS: Theoretical considerations and applications. Technical Memorandum 66-8. Prepared by C-E-I-R, Inc. under Contract No. DA-42-007-AMC-141(R) for U.S. Army Test and Evaluation Command, Dugway Field Operation, Dugway, UT.
- Taylor, W.T., W.C. McIntyre, J.W. Barry, H.S. Sloane, and G.L. Sutton. 1972. Services developmental test, PWU-5/A USAF modular internal spray system Final report. DTC Project No. DTC-FR-73-317. Deserte Test Center, Fort Douglas, UT.
- Van Liere, J. and J.W. Barry. 1973. Canopy penetration of aerially disseminated chemical materials Final report DTC Study 71-152 Phase II. DTC Project No. DTC-FR-71-152(II). Deseret Test Center, Fort Douglas, UT.
- Waldron Jr., A.W. 1975. An engineering approach to the problem of maximizing zectran particle capture on spruce budworms in a dense coniferous forest Technical note. DPG Document No. DPG-TN-M605P. U.S. Army Dugway Proving Ground, Dugway, UT.
- Wang, Y. 1989. Turbulence structure, momentum and heat transport in the edge of broad leaf tree stands. Technical Report (contributing to Program Wind). Prepared by Department of Natural Resources Management and Engineering and Civil Engineering, University of Connecticut for U.S. Army.





## **REGION AND STATION REPORTS**

- Anhold, J. and S. Munson. Undated. USDA Department of Agriculture, Division of Plant Industry, 1992 gypsy moth eradication program project work and safety plan. USDA Forest Service, Region 4, Forest Pest Management, Ogden, UT.
- Anhold, J. 1991. Utah gypsy moth eradication program, 1991 gypsy moth project report. USDA Forest Service, Forest Pest Management, Ogden, UT.
- Anonymous. Undated. Preliminary data Pine butterfly field experiment, Bitterroot national forest, June 1973. USDA Forest Service, Northern Region, Division of State and Private Forestry, Missoula, MT.
- Anonymous. Undated. Western spruce budworm 1987 operations manual. USDA Forest Service, Pacific Northwest Region, Portland, OR.
- Anonymous. Undated. 1990 Yakima Indian Reservation western spruce budworm suppression project. Project Report. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- Anonymous. 1969. Minutes, 1969 zectran pilot test analysis, northern region, October 14-15, 1969. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- Anonymous. 1972. Analysis of the 1971 spruce budworm pilot test, Nezperce national forest, Idaho, October 19-20, 1971. USDA Forest Service, Division of State and Private Forestry, Missoula, MT.
- Anonymous. 1974. Proceedings of the twenty-fifth annual western forest insect work conference, Salt Lake City, Utah, March 5-7, 1974. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

- Anonymous. 1974. Proceedings Aerial application of insecticides against forest defoliators (chemicals and microbials), Missoula, MT, April 23-24, 1974. Sponsored by USDA Forest Service, State and Private Forestry; Northern Region, Missoula, MT; Equipment Development Center, Missoula, MT; and Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Anonymous. 1975. Preliminary report 1975 western spruce budworm pilot project Sevin 4-oil. USDA Forest Service, Region 1, Missoula, MT.
- Anonymous. 1976. Progress report of the 1976 pilot control project on the Helena national forest, Montana. USDA Forest Service, Region 1, State and Private Forestry, Missoula, MT.
- Anonymous. 1976. The western spruce budworm problem in Idaho and Montana, 1976. R1-76-24. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- Anonymous. 1976. Preliminary report 1975 western spruce budworm pilot project Dylox 4. USDA Forest Service, Region 1, Missoula, MT.
- Anonymous. 1976. Critique, 1975 western spruce budworm pilot projects R-1, November 20-21, 1975. USDA Forest Service, Region 1, Forest Environmental Protection, Missoula, MT.
- Anonymous. 1977. 1976 cooperative western spruce budworm control project. USDA Forest Service, Pacific Northwest Region, Portland, OR.
- Anonymous. 1978. Unit spray operations guide, spruce budworm control program. USDA Forest Service, Region 6, Portland, OR.
- Anonymous. 1981. Environmental monitoring program 1974 cooperative douglas-fir tussock moth control project Oregon, Washington, Idaho. Summary report. USDA Forest Service, Pacific Northwest Region, Portland, OR.

- Anonymous. 1982. Aerial applicator's handbook. USDA Forest Service, Siskiyou National Forest, Grants Pass, OR.
- Anonymous. 1985. Synopsis of the 1985 western spruce budworm operational evaluation using *Bacillus thuringiensis* on the Malheur national forest, Oregon. USDA Forest Service, Region 6, Forest Pest Management, Portland, OR.
- Anonymous. 1990. Gypsy moth research and development program. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Anonymous. 1990. Decision notice and finding of no significant impact 1990 cooperative gypsy moth eradication project, Utah Department of Agriculture and USDA Forest Service, Wasatch-Cache and Uinta National Forests. USDA Forest Service, Intermountain Region, Ogden, UT.
- Anonymous. 1994. Ecosystem Management 1993 annual report of the Forest Service. USDA Forest Service, Washington, DC.
- Barber, L. and D.S. Leonard. 1985. Final report: 1980-1981 guthion-pydrin aerial application pilot study. Report #85-1-11. USDA Forest Service, Forest Pest Management, Asheville, NC.
- Barber, L. and A. Mangini. 1993. A comparison of ground and aerial application at the Union Camp southern states loblolly pine seed orchard, Claxton, GA, August 20-22, 1991. Report No. 93-1-04. USDA Forest Service, Forest Pest Management, Asheville Field Office, Asheville, NC.
- Barber, L.R. and R. Cox. 1994. An evaluation of white pine cone beetle populations on four Tennessee Division of Forestry seed orchards. Report #94-1-29. USDA Forest Service, Forest Health, Asheville, NC.
- Barry, J.W., P.A. Kenney, L. Barber, R.B. Ekblad, R.J. Dumbauld, J.E. Rafferty, H.W. Flake, and N.A. Overgaard. 1982. Aerial application to southern pine seed orchards Data report of the Withlacoochee trials. Report No. 82-1-23. USDA Forest Service, Forest Pest Management, Asheville, NC.

- Beckwith, R., M. Stelzer, and B. Hostetler. 1984. Field testing of two isolates of *Bacillus thuringiensis* against the western spruce budworm (A progress report). USDA Forest Service, Pacific Northwest Forest and Range Experiment Station.
- Bennett, D.D., D.R. Wahlfeld, and J.M. Schmid. 1984. Pandora moth suppression project using acephate, Jacob Lake, Arizona, 1983 Kaibab National Forest, Arizona. R-3 84-10. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- Bennett, D.D. and J.P. Linnane. 1985. Western spruce budworm suppression project--1984 Lincoln National Forest, Mescalero Apache Indian Reservation, and adjacent private lands, New Mexico. R-3 85-11. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- Blus, L., C. Henny, C. Rise, and R. Grove. 1992. Effects of aerial applications of esfenvalerate on small mammals and birds in douglas-fir seed orchards. R6-91-05. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- Boberschmidt, L., S. Saari, J. Sassaman, and L. Skinner. 1989. Pesticide background statements Volume IV insecticides. Agriculture Handbook Number 685. Prepared by the Mitre Corporation under Contract No. 53-3187-4-43 for USDA Forest Service, Forest Pest Management, Washington, DC.
- Bousfield, W. and T. Flavell. 1980. Effects of dipel wettable powder for foliage protection against western spruce budworm 1 and 2 years following aerial application. Report No. 80-9. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- Bousfield, W., F. Cifala, and R. Kracht. 1987. Western spruce budworm control project on the Big Timber Ranger District, Gallatin National Forest, Montana. Report 87-8. USDA Forest Service, Northern Region, Forest Pest Management, Missoula, MT.

- Boyd, R.J., D.L. Miller, F.A. Kidd, and C.P. Ritter. 1985. Herbicides for forest weed control in the inland Northwest: A summary of effects on weeds and conifers. General Technical Report INT-195. USDA Forest Service, Intermountain Research Station, Ogden, UT.
- Brown, D.H. 1969. The effect of phytoactin applied by helicopter to western white pine infected with *cronartium ribicola*. USDA Forest Service, Northern Region, Division of State and Private Forestry, Missoula, MT.
- Buffam, P.E., H.E. Meyer, and R.P. Miskus. 1967. Small-scale trials of five insecticides sprayed on spruce budworm in Montana. Research Note PSW-159. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Bush, P.B. and J. Taylor. 1994. Aerial application of permethrin to evaluate the effects of release height and the use of additives. Project Report. Prepared by Agricultural Services Laboratory, The University of Georgia and USDA Forest Service for Union Camp Corporation, Savannah, GA.
- Bush, P.B. and J.W. Taylor. 1994. Aerial application of permethrin for defining a critical FSCBG model parameter. Project Report. Prepared by Agricultural Services Laboratory, The University of Georgia and USDA Forest Service for Union Camp Corporation, Savannah, GA.
- Buzzard, W., D. Twardus, K. Mierzejewski, and W. MacFarland. 1990. Gettysburg rotary-wing aircraft characterization, June 19-23, 1989. USDA Forest Service, Forest Pest Management, Morgantown, WV.
- Campbell, R.W. 1993. Population dynamics of the major north American needle-eating budworms. Research Paper PNW-RP-463. USDA Forest Service, Pacific Northwest Research Station, Portland, OR.
- Casebeer, R.L. 1965. Monitoring the 1964 spruce budworm aerial spray project, Salmon national forest. USDA Forest Service, Ogden, UT.

- Ciesla, W.M., J.E. Dewey, and M.D. McGregor. Undated. Pilot test of western spruce budworm control strategy in the mixed conifer forests of Region 1 using registered formulation of zectran, Nezperce national forest, Idaho. Work Plan. USDA Forest Service, Forest Insect and Disease Branch, Region 1, Missoula, MT.
- Coleman, G.M. and W.F. Savage. Undated. Environmental assessment for gypsy moth eradication Wasatch-Cache & Uinta national forests. Prepared by Coleman Associates for USDA Forest Service, Wasatch-Cache, and Uinta National Forests, UT.
- Cook, J., W. Whaley, F. Nabrotsky, R. Hone, J. Anhold, L. Lamadeleine, J. Keller, R. Rusk, and G. King. 1992. Supplement to environmental assessment for gypsy moth eradication in Utah (decision notice and finding of no significant impact). USDA Forest Service, Intermountain Region, Ogden, UT and Utah State Department of Agriculture, Salt Lake City, UT.
- Cota, J.A. 1987. Operational use of a biological insecticide: *Bacillus thuringiensis* for control of the western spruce budworm in northern New Mexico Final report of the 1981 pilot project. R-3 87-6. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- DeBarr. G.L. and E.P. Merkel. 1969. A seed orchardist's guide to the handling of insecticides and the calibration of spray equipment. USDA Forest Service, Southeastern Forest Experiment Station, Asheville, NC.
- Dewey, J.E., W.M. Ciesla, and M.D. McGregor. The 1971 western spruce budworm pilot test, Nezperce national forest and Idaho state lands. USDA Forest Service, Northern Region, Division of State and Private Forestry, Missoula, MT.
- Dewey, J.E. 1973. Field testing of candidate insecticides for control of the pine butterfly (Environmental Analysis). USDA Forest Service, Region 1, Missoula, MT.

- Dewey, J.E. 1974. Study plan A pilot control project aerially applying a nucleopolyhedrosis virus and *Bacillus thuringiensis* to douglas-fir tussock moth populations in Idaho, 1974. USDA Forest Service, Division of State and Private Forestry, Northern Region, Missoula, MT.
- Dewey, J.E., M.D. McGregor, R.L. Marsalis, J.W. Barry, C.B. Williams, and W.M. Ciesla. 1974. Mexacarbate and *Bacillus thuringiensis* for control of pine butterfly infestations, Bitterroot national forest, Montana...1973. Report No. 74-10. USDA Forest Service, Northern Region, Division of State and Private Forestry, Missoula, MT.
- Dewey, J.E. 1975. Pilot control project of carbaryl, trichlorfon, and *Bacillus thuringiensis* against western spruce budworm, Beaverhead and Gallatin national forests, Montana, 1975. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- Flavell, T.H., S. Tunnock, and W. Bousfield. 1976. Pilot project to evaluate Dylox and Orthene for controlling the western spruce budworm (Work Plan). USDA Forest Service, Region 1, Missoula, MT.
- Flavell, T.H., S. Tunnock, and H.E. Meyer. 1977. A pilot project evaluating trichlorfon and acephate for managing western spruce budworm, Helena national forest 1976. Report No. 77-16. USDA Forest Service, Northern Region, State and Private Forestry, Forest Insect and Disease Management, Missoula, MT.
- Flavell, T.H. and J.E. Dewey. 1978. Work plan A demonstration/pilot project utilizing *Bacillus thuringiensis* and carbaryl for suppression of spring and fall cankerworms in North Dakota, 1978. USDA Forest Service, Pacific Northwest Station, Portland, OR and Forest Insect and Disease Management, Region 1, Missoula, MT.
- Flavell, T.H., S. Tunnock, J.W. Barry, R.B. Ekblad, and W.M. Ciesla. 1978. Western spruce budworm, a pilot control project with carbaryl and trichlorfon, 1975. Report No. 78-5. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.

- Fleischer, S., A. Roberts, J. Young, P. Mahoney, F.W. Ravlin, and R. Reardon. 1992. Development of geographic information system technology for gypsy moth management within a county: An overview. NA-TP-01-93. USDA Forest Service, Northeastern Area, Appalachian Integrated Pest Management, Morgantown, WV.
- Foley, L.H. (Compiler). 1994. Proceedings of the national silviculture workshop Silviculture: From the cradle of forestry to ecosystem management. General Technical Report SE-88. USDA Forest Service, Southeastern Forest Experiment Station, Asheville, NC.
- Fosbroke, S.L.C. and K.W. Gottschalk. 1993. Proceedings, U.S. Department of Agriculture, interagency gypsy moth research forum, 1993. General Technical Report NE-179. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Fosbroke, S.L.C. and K.W. Gottschalk (eds.). 1994. Proceedings, U.S. Department of Agriculture, interagency gypsy moth research forum, 1994. General Technical Report NE-188. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Furniss, M.M., G.P. Markin, and V.J. Hager. 1982. Aerial application of douglas-fir beetle antiaggregative pheromone: Equipment and evaluation. General Technical Report INT-137. USDA Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.
- Ghent, J.H. and D.B. Twardus. 1994. The spray swath of the DC-3 for gypsy moth suppression using *Bacillus thuringiensis*. NA-TP-05-94. USDA Forest Service, Northeastern Area, State and Private Forestry, Morgantown, WV.
- Gottschalk, K.W., M.J. Twery, and S.I. Smith (eds.). 1991. Proceedings, U.S. Department of Agriculture, interagency gypsy moth research review, 1990. General Technical Report NE-146. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.

- Gottschalk, K.W. and M.J. Twery (eds.). 1992. Proceedings U.S. Department of Agriculture, interagency gypsy moth research forum 1991. General Technical Report NE-167. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Gottschalk, K.W. and M.J. Twery (eds.). 1992. Proceedings U.S. Department of Agriculture, interagency gypsy moth research forum 1992. General Technical Report NE-170. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Gottschalk, K.W. and W.R. MacFarlane. 1993. Photographic guide to crown condition of oaks: Use for gypsy moth silvicultural treatments. General Technical Report NE-168. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Gottschalk, K.W. 1993. Silvicultural guidelines for forest stands threatened by the gypsy moth. General Technical Report NE-171. USDA Forest Service, Northeastern Forest Experiment Station, Radnor, PA.
- Graham, D.A., J. Mounts, and D. Almas. 1975. 1974 cooperative douglasfir tussock moth control project - Oregon, Washington, Idaho. USDA Forest Service, Pacific Northwest Region, Portland, OR.
- Grimble, D.G. 1993. Impacts of *Bacillus thuringiensis* on nontarget lepidoptera in western coniferous forests. NAPIAP Study No. PNW-43 (Progress Report FY 1993). USDA Forest Service, Pacific Northwest Research Station, Forestry Sciences Laboratory, Corvallis, OR.
- Hadfield, J.S. (Incident Commander). Undated. 1993 Warm Springs Indian Reservation western spruce budworm suppression project. Project Report. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- Hadfield, J.S. 1992 Umatilla and Wallowa-Whitman national forests western spruce budworm suppression project La Grande and Walla Walla ranger districts. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.

- Hamel, D.R. (ed.). 1987. Short subjects and timely tips for pesticide users. Issue Nos. 87-1 through 87-19. USDA Forest Service, Forest Pest Management, Washington, DC.
- Hamel, D.R. (ed.). 1988. Short subjects and timely tips for pesticide users. Issue Nos. 88-1 through 88-17. USDA Forest Service, Forest Pest Management, Washington, DC.
- Hamel, D.R. (ed.). 1989. Short subjects and timely tips for pesticide users. Issue Nos. 89-1 through 89-20. USDA Forest Service, Forest Pest Management, Washington, DC.
- Hamel, D.R. (ed.). 1990. Short subjects and timely tips for pesticide users. Issue Nos. 90-1 through 90-17. USDA Forest Service, Forest Pest Management, Washington, DC.
- Hard, J.S., J.D. Ward, and S. Ilnytzky. 1978. Control of douglas-fir tussock moth by aerially applied dimilin (TH 6040). Research Paper PSW-130. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Hard, J., R. Frye, D. Carey, and M.E. Dix. 1979. An evaluation of day and night aerial Bt applications for cankerworm control in siberian elm shelterbelts. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- Hard, J.S., S. Meso, and M. Haskett. 1979. Testing aerially applied orthene for control of larch casebearer. Research Paper PSW-138. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Himel, C.M., L. Vaughn, R.P. Miskus, and A.D. Moore. 1965. A new method for spray deposit assessment. Research Note PSW-87. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.

- Hofacker, T.H., T. Smith, D.P. Graham, R.E. Sandquist, J.W. Barry, and G. Blackwell. 1980. 1979 douglas-fir tussock moth suppression projects Santa Fe national forest and Ellena Gallegos grant. R-3 80-2. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Insect and Disease Management, Albuquerque, NM.
- Hoffard, W.H., P.W. Orr, and J.W. Barry (Program Coordinators). 1977.

  Proceedings Workshop on aerial application of insecticides against forest defoliators. Sponsored by USDA Forest Service, Northeastern Area, State and Private Forestry, Forest Insect and Disease Management, Upper Darby, PA.
- Honing, F.W. 1968. Spruce budworm zectran pilot control test, Bitterroot national forest, 1966. USDA Forest Service, Northern Region, Division of State and Private Forestry, Missoula, MT.
- Hostetler, B.B. 1981. Use of two Bt formulations for suppression of jack pine budworm, Nebraska national forest, 1980. Technical Report R2-25. USDA Forest Service, Rocky Mountain Region, State and Private Forestry, Lakewood, CO.
- Howes, S.W. and D. Wallesz. Project report 1992 Umatilla and Wallowa-Whitman national forests, western spruce budworm suppression project, Wallowa Valley ranger district. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- Hubbard, H.B. Jr. and F.B. Lewis. 1973. A spray tower for the application of microbial aerial sprays. Research Paper NE-249. USDA Forest Service, Northeastern Forest Experiment Station, Upper Darby, PA.
- Hughes, D., P. Rea, B. Hanson, and J. Christner. 1980. Water quality monitoring guides for pesticide detection. R6-WS-040-1980. USDA Forest Service, Pacific Northwest Region, Portland, OR.

- Leonard, D.S., B.A. Leonhardt, W.H. McLane, J.H. Ghent, S.K. Parker, T.J. Roland, and R.C. Reardon. 1992. Aerial application of racemic disparlure to manage low-level populations of gypsy moth Giles County, Virginia. NA-TP-04-92. USDA Forest Service, Forest Pest Management, Asheville, NC.
- Look, M. 1978. Adding tracer can reduce effectiveness of acephate. Research Note PSW-333. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Maksymiuk, B. 1964. The drop size spectra method for estimating mass median diameter of aerial sprays. Research Paper WO-1. USDA Forest Service, Forest Insect Laboratory, Beltsville, MD.
- Maksymiuk, B., P.A. Boving, R.D. Orchard, and R.G. Winterfeld. 1968.

  Progress report Biological evaluation of helicopter spray equipment for applying polyhedrosis virus to control the douglas-fir tussock moth. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory, Corvallis, OR. and Agricultural Engineering Research Division, Forest Grove, OR.
- Maksymiuk, B., J. Neisess, R.A. Waite, and R.D. Orchard. 1971. Progress report A field experiment in determining the effectiveness of fluorescent tracer rhodamine for assessing spray deposit of registered zectran formulation (Nezperce national forest, Idaho, 1971). USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory, Corvallis, OR.
- Maksymiuk, B. and R.D. Orchard. 1974. Techniques for evaluating *Bacillus* thuringiensis and spray equipment for aerial application against forest defoliating insects. Research Paper PNW-183. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Maksymiuk, B. 1977. Glossary of terms used in application of insecticides. USDA Forest Service, Forestry Sciences Laboratory, Pacific Northwest Forest and Range Experiment Station, Corvallis, OR.

- Markin, G.P., H.O. Batzer, and J.W. Brewer. 1978. Effectiveness of three insecticides applied at two droplet sizes for control of the douglas-fir tussock moth and western spruce budworm. Research Note PNW-321. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Markin, G.P. and D.R. Johnson. 1986. Aerial field tests of five insecticides on western spruce budworm in Idaho and Montana, 1978-1980. Research Note PSW-385. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Marsden, M.A., D.B. Twardus, and W.M. Ciesla. 1984. Efficacy of *Bacillus thuringiensis* on western spruce budworm relative to deposit density and foliar development. Report No. 84-7. USDA Forest Service, Forest Pest Management, Methods Application Group, Fort Collins, CO.
- Marsden, M.A., D.B. Cahill, and R.L. Livingston. 1985. Status of western spruce budworm populations following the 1979 Cascade, Idaho control project. Report No. 85-3. USDA Forest Service, Forest Pest Management, Methods Application Group, Fort Collins, CO.
- McConnell, T. and J.S. Hadfield. 1990. Dipel 6AF spray trials, Yuba City airport, California, December, 1989. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- McConnell, T. 1991. 1991 DFTM suppression project, Wallowa-Whitman national forest, thuricide 48LV characterization inspection summary. USDA Forest Service, Forest Pest Management, Portland, OR.
- McGregor, M.D. and J.E. Dewey. 1969. Zectran pilot test to control spruce budworm, Belmont and Chamberlain creeks, Blackfoot river drainage, Montana, 1968. USDA Forest Service, Northern Region, Division of State and Private Forestry, Missoula, MT.

- McGregor, M.D., S. Tunnock, J.E. Dewey, and W.M. Ciesla. 1974. Pilot control project of nucleopolyhedrosis virus and *Bacillus thuringiensis* to control douglas-fir tussock moth populations in Idaho 1974. Report No. 74-26. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- McGregor, M.D., D.R. Hamel, and R.C. Lood. 1976. Dipel wettable powder (Bacillus thuringiensis Berliner) as a control agent for western spruce budworm Choristoneura occidentalis Free. Report No. 76-11. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- McManus, M.L. and D. Twardus. 1989. Identifying gypsy moth early larval instars. NA-FB/P-32. USDA Forest Service, Northeastern Area, Northeastern Forest Experiment Station, Radnor, PA.
- Mierzejewski, K., W.G. Yendol, J.E. Bryant, W.L. McLane, T.J. Roland, R.C. Reardon, M.L. McManus. 1986. A field study of deposit characteristics of aerially applied *Bacillus thuringiensis* formulations from NOVO laboratories. NA-TP-15. USDA Forest Service, Northeastern Area, Morgantown, WV.
- Mierzejewski, K., R. Reardon, W. McLane, N. Dubois, T. Roland, W. Yendol, and A. Onken. 1993. Evaluation of three application rates of *Bacillus thuringiensis*: Efficacy and deposit analysis. NA-TP-08-93. USDA Forest Service, Northeastern Area, Appalachian Integrated Pest Management, Morgantown, WV.
- Morris, O.N., J.B. Dimond, and F.B. Lewis. 1984. Guidelines for the operational use of *Bacillus thuringiensis* against the spruce budworm Spruce budworm handbook. Agriculture Handbook No. 621. USDA Forest Service, Northeastern Forest Experiment Station, Hamden, CT.
- Mounts, J. and D. McComb. 1975 pilot project of fenitrothion for control of western spruce budworm. USDA Forest Service, Region 6, Insect and Disease Management, State and Private Forestry, Portland, OR.

- Mounts, J., R.E. Dolph, D. McComb, and T. Gregg. 1978. 1977 cooperative western spruce budworm control program in north-central Washington state. USDA Forest Service, Region 6, Portland, Oregon.
- Munson, S. 1990. Utah gypsy moth eradication program, 1990 gypsy moth report. USDA Forest Service, Forest Pest Management, Ogden, UT.
- Munson, S. and J. Anhold. 1991. Utah Department of Agriculture, Division of Plant Industry, 1991 gypsy moth eradication program, project work and safety plan. USDA Forest Service, Forest Pest Management, Ogden Field Office, Ogden, UT.
- Neisess, J., B. Maksymiuk, R.A. Waite, and M.J. Haskett. 1973. Comparative studies of spray deposit distribution of zectran and pyrethrins used against the douglas-fir tussock moth in 1972. Progress Report 73-1. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory, Corvallis, OR.
- Onken, A., R. Reardon, and J. Barry. 1994. Diflubenzuron database. FHM-NC-02-94. USDA Forest Service, National Center of Forest Health Management, Morgantown, WV.
- Onken, A., R. Reardon, and J. Barry. 1994. Diflubenzuron Update no. 1 (Databases). USDA Forest Service, National Center of Forest Health Management, Morgantown, WV.
- Onken, A. and R. Reardon. 1994. Gypsy moth nucleopolyhedrosis virus Gypchek (Bibliography). FHM-NC-05-94. USDA Forest Service, National Center of Forest Health Management, Morgantown, WV.
- Onken, A. and R. Reardon. 1994. Douglas fir tussock moth nucleopolyhedrosis virus TM-Biocontrol (Bibliography). FHM-NC-06-94. USDA Forest Service, National Center of Forest Health Management, Morgantown, WV.
- Onken, A. 1995. The effects of diflubenzuron on non-targets (Bibliography). FHM-NC-02-95. USDA Forest Service, National Center of Forest Health Management/Forest Health Protection, Morgantown, WV.

- Onken, A., S. Munson, and R. Reardon. 1995. The effects of *Bacillus* thuringiensis var. kurstaki on non-targets (Bibliography). FHM-NC-03-95. USDA Forest Service, National Center of Forest Health Management, Morgantown, WV.
- Orchard, R.D. and G.P. Markin. 1975. Evaluation of the Boeing-Vertol 107 helicopter and spray system for forest application of insecticide. Research Note PNW-264. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Parker, D.L., R.E. Acciavatti, E.D. Lessard, and I.R. Ragenovich. 1980. Western spruce budworm suppression and evaluation project using carbaryl Final report, 1977-79, New Mexico. R3 81-2. USDA Forest Service, Southwestern Region, Forest Pest Management, State and Private Forestry, Albuquerque, NM.
- Parker, D.L. 1981. Pilot project to determine use of acephate against pandora moth. USDA Forest Service, Region 3, Forest Pest Management, Albuquerque, NM.
- Peterson, G.W. 1981. Pine and juniper diseases in the Great Plains. General Technical Report RM-86. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Ft. Collins, CO.
- Pierce, J.R. Review draft Pilot control project of dylox on the Modoc budworm 1974 project report. USDA Forest Service, Region 5, San Francisco, CA.
- Ragenovich, I.R. and D.L. Parker. 1981. Western spruce budworm suppression and evaluation project using carbaryl, 1980 Progress report no. 4. R-3 81-9. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- Ragenovich, I.R. 1983. Pilot project to evaluate the operational use of *Bacillus thuringiensis* against the western spruce budworm in northern New Mexico--1981-82, Carson national forest and state and private land, New Mexico. R-3 84-1. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.

- Ragenovich, I. 1988. Operational and experimental use of *Bacillus* thuringiensis for control of western spruce budworm in Oregon and Washington, 1983-1987. R6-88-06. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- Reardon, R. Undated. Field persistence and efficacy of *Bacillus thuringiensis* on populations of spruce budworm in Wisconsin. USDA Forest Service, Forest Pest Management, Morgantown, WV.
- Reardon, R. Undated. Plan of work The Appalachian integrated pest management gypsy moth demonstration project Fiscal year 1992. USDA Forest Service, AIPM, Morgantown, WV.
- Reardon, R., W. Yendol, W. McLane, T. Roland, N. Foster, P. Kenney, and K. Mierzejewski. 1990. Relative catch efficiency of eight collectors using two aerially applied formulations of *Bacillus thuringiensis* NA-TP-16. USDA Forest Service, Northeastern Area, Forest Pest Management, Morgantown, WV.
- Reardon, R. 1991. Aerial spraying for gypsy moth control: A handbook of technology. NA-TP-20 (Updated Version). USDA Forest Service, Northeastern Area, Northeastern Forest Experiment Station, Northeast Forest Aerial Application Technology Group, Morgantown, WV.
- Reardon, R. and J. Podgwaite. 1992. The gypsy moth nucleopolyhedrosis virus product (Gypchek). NA-TP-02-92. USDA Forest Service, Northeastern Area, Appalachian Integrated Pest Management, Morgantown, WV.
- Reardon, R., L. Venables, and A. Roberts. 1993. The Maryland integrated pest management gypsy moth project, 1983-1987. NA-TP-07-93. USDA Forest Service, Northeastern Area, Morgantown, WV.
- Reardon, R.C. and V.C. Mastro. 1993. Development and status of the sterile insect technique for managing gypsy moth. NA-TP-13-93. USDA Forest Service, Northeastern Area, Appalachian Integrated Pest Management, Morgantown, WV.

- Reardon, R. and A. Hajek. 1993. *Entomophaga maimaiga* in North America: A review. NA-TP-15-93. USDA Forest Service, Northeastern Area, Appalachian Integrated Pest Management, Morgantown, WV.
- Roberts, R.B. (Technical Coordinator). 1976. Pesticide spray application, behavior, and assessment: Workshop proceedings, March 1-2, 1973, Emeryville, CA. General Technical Report PSW-15. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Rogers, T.J., J.M. Chavez, and J.P. Linnane. 1985. Western spruce budworm suppression project using *Bacillus thuringiensis* berliner--1984 Carson national forest, New Mexico, March 1985. R-3 85-6. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- Rogers, T.J. 1992. Western spruce budworm suppression project using *Bacillus thuringiensis* Berliner--1985, Carson National Forest, New Mexico, December 1992. R-3 92-2. USDA Forest Service, Southwestern Region, Forest Pest Management, Albuquerque, NM.
- Rogers, T.J. 1994. 1986 western spruce budworm suppression project, Camino Real ranger district. 3420 Memorandum to the Record. USDA Forest Service, Southwestern Region, Albuquerque, NM.
- Sassaman, J.F. and M.M. Jacobs. 1986. Pesticide background statements Volume I. herbicides (supplement). Agriculture Handbook No. 633. Prepared by The Mitre Corporation under Contract No. 53-3187-4-43 for USDA Forest Service, Forest Pest Management, Washington, DC.
- Schmid, J.M. 1981. Incidence of western spruce budworm parasites in New Mexico after aerial spraying with carbaryl. Research Note RM-397. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Ft. Collins, CO.
- Schmid, J.M. and D.D. Bennett. 1988. The North Kaibab pandora moth outbreak, 1978-1984. General Technical Report RM-153. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

- Schmiege, D.C., C.E. Crisp, R.L. Lyon, R. Miskus, R.B. Roberts, and P.J. Shea. 1970. Evaluation report on zectran A substitute for DDT in the control of western spruce budworm. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Schneeberger, N.F. 1990. 1990 gypsy moth suppression activities, Aberdeen Proving Ground, Maryland. USDA Forest Service, Forest Pest Management, Morgantown, WV.
- Secrest, J.P. Undated. Fluorescent materials as tracers in insecticides. USDA Forest Service, Beltsville Forest Insect Laboratory, Beltsville, MD.
- Stewart, R.E. and H. Gratkowski. 1976. Aerial application equipment for herbicidal drift reduction. General Technical Report PNW-54. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Stipe, L.E., J.A.E. Knopf, R.L. Livingston, R.W. Young, and G.P. Markin. Undated. A pilot project with orthene for control of the western spruce budworm, McCall, Idaho 1977. USDA Forest Service, Intermountain Region, Ogden, UT.
- Stipe, L.E., K.E. Gibson, and R.L. Livingston. Undated. Work Plan Douglasfir tussock moth suppression program for northern Idaho, 1986. USDA Forest Service, Northern Region, Missoula, MT. and Idaho Department of Lands, Coeur d'Alene, ID.
- Stipe, L.E., C.G. Niwa, R.G. Eder, K.E. Gibson, and H.E. Meyer. 1983. Pilot project of *Bacillus thuringiensis* against western spruce budworm in central Montana, 1981. Report 83-4. USDA Forest Service, Northern Region, Cooperative Forestry and Pest Management, Missoula, MT.
- Stipe, L.E., C.G. Niwa, and R.G. Eder. 1984. Treatment effects three years following a *B.t.* application to control western spruce budworm. Report 84-12. USDA Forest Service, Northern Region, Cooperative Forestry and Pest Management, Missoula, MT.

- Stipe, L.E. and K.E. Gibson. 1986. Progress report A pilot project to evaluate efficacy of aerially applied nucleopolyhedrosis virus on douglas-fir tussock moth in northern Idaho, 1985. Report No. 86-13. USDA Forest Service, Northern Region, State and Private Forestry, Missoula, MT.
- Stipe, L.E. 1988. Western spruce budworm Meacham pilot project Operations report, Umatilla national forest. USDA Forest Service, Pacific Northwest Region, Umatilla National Forest, Pendleton, OR.
- Stock, M. and J. Robertson. 1984. Genetic characteristics of western spruce budworm populations: A validation test of the spray efficacy model (LEM). Canada/U.S. Spruce Budworms Program--West Final report. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Taynton, S. 1969. The 1967 Big Smoky spruce budworm zectran project. An Administrative Study conducted by the Sawtooth National Forest, Intermountain Region. USDA Forest Service, Division of Timber Management, Ogden, UT.
- Telfer, W.G., I.R. Ragenovich, and T.J. Rogers. 1982. Western spruce budworm suppression and evaluation project using carbaryl-1977 Santa Fe national forest and Jemez Pueblo Indian Reservation, New Mexico Progress report no. 5. R-3 82-7. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- Telfer, W.G. 1983. Western spruce budworm suppression and evaluation project using carbaryl--1977 Santa Fe national forest and Jemez Pueblo Indian Reservation, New Mexico Progress report no. 6. R-3 83-9. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.
- Telfer, W.G., J.P. Linnane, and J.H. Davis. 1983. Western spruce budworm suppression project--1982, Carson national forest and state and private lands. R-3 83-12. USDA Forest Service, Southwestern Region, State and Private Forestry, Forest Pest Management, Albuquerque, NM.

- Telfer, W.G. and J.P. Linnane. 1984. Western spruce budworm suppression project--1983 Carson national forest, New Mexico. R-3 84-14. USDA Forest Service, Southwestern Region, State and Private Forestry, Albuquerque, NM.
- Thompson, C.G., J. Neisess, and H.O. Batzer. 1977. Field tests of *Bacillus thuringiensis* and aerial application strategies on western mountainous terrain. Research Paper PNW-230. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Tunnock, S. and R.E. Denton. 1963. Aerial pilot tests of three insecticides against the larch casebearer, 1963. USDA Forest Service, Region 1, Division of State and Private Forestry, Missoula, MT.
- Tunnock, S. 1966. A pilot test to control douglas-fir tussock moths by an aerial application of nuclear polyhedrosis virus during 1965. USDA Forest Service, Division of State and Private Forestry, Region 1, Missoula, MT.
- Twardus, D.B. 1990. A guide to weather and gypsy moth spray operations in the east. USDA Forest Service, Forest Pest Management, Morgantown, WV.
- Twardus, D.B. and H.A. Machesky. 1990. Gypsy moth suppression in the northeast A 3-year summary of the treatment monitoring data base. NA-TP-18. USDA Forest Service, Forest Pest Management, Northeastern Area, State and Private Forestry, Morgantown, WV.
- Twardus, D.B. and H.A. Machesky. 1990. Gypsy moth suppression in the northeast A 3-year summary of the treatment monitoring data base. Executive Summary. USDA Forest Service, Forest Pest Management, Northeastern Area, State and Private Forestry, Morgantown, WV.
- Washburn, R.I., R.L. Livingston, and G.P. Markin. 1977. An aerial test of orthene against the larch casebearer. Research Note INT-226. USDA Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.
- Wiesner, C. 1988. Foliage deposit assessment sampling. Prepared by the Research and Productivity Council for USDA Forest Service, Pacific Northwest Region, Portland, OR.

- Wernz, J. and G.P. Markin. 1977. Flow rates and characteristics of dimilin, dylox 1.5, orthene 75S, and sevin 4-oil. Research Note PNW-300. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Wiitala, M.R. 1989. Analysis of western spruce budworm application costs during 1987 and 1988 suppression projects. R6-89-04. USDA Forest Service, Pacific Northwest Region, Forest Pest Management, Portland, OR.
- Williams, C.B., J.E. Dewey, W.M. Ciesla, O. Daniels, H. Camp, R.W. Harris, G.C. Moon, and S. Yurich. 1973. Study plan Field experiment of insecticides on pine butterfly populations, Bitterroot national forest, Montana, 1973. USDA Forest Service, Region 1, State and Private Forestry, Missoula, MT.
- Williams Jr., C.B., G.P. Markin, and P.J. Shea. 1978. Effects of carbaryl, trichlorfon, and DDT on collapsing douglas-fir tussock moth populations in Oregon. Research Note PSW-334. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Williams Jr., C.B., P.J. Shea, B. Maksymiuk, J.A. Neisess, and D. McComb. 1978. Aerial application of mexacarbate and stabilized pyrethrins on douglas-fir tussock moth populations. Research Note PSW-332. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Williams Jr., C.B., P.J. Shea, and M.D. McGregor. 1979. Effects of aerially applied mexacarbate on western spruce budworm larvae and their parasites in Montana. Research Paper PSW-144. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Williamson, M. and C.I. Shade. 1986. Safety training for forestry herbicide applicators. GPO 482-808/42345 (USDA Forest Service, FS-393). Washington, DC.
- Wimmer, M.J., R.R. Smith, and J.P. Jones. 1993. A new method to measure residual dimilin in the environment. USDA Forest Service, Northeastern Area, Appalachian Integrated Pest Management, Morgantown, WV.

Young, V.D. 1966. Results of tests to develop operational procedures for controlling douglas-fir tussock moth with aerial application of polyhedral virus spray - Progress report. ARS, Agricultural Engineering Research Division and Entomology Research Division, Forest Grove, OR and USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Forest Insect Research, Portland, OR.

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**CANADIAN REPORTS AND PAPERS** 



## CANADIAN REPORTS AND PAPERS

- Anonymous. 1975. Aerial Application of Pesticides Safety Manual. Ottawa, Ontario: Environmental Health Directorate, Department of National Health and Welfare.
- Anonymous. 1992. 1992 spruce budworm aerial treatment program report. Forest Protection Limited, Fredericton, New Brunswick.
- Anonymous. 1993. 1993 spruce budworm and hemlock looper aerial treatment program report. Forest Protection Limited, Fredericton, New Brunswick.
- Anonymous. 1994. Special Issue On "Improved Pesticide Applications." (Papers presented at the workshop organized under the auspices of the *joint annual meeting of the entomological society of Canada and the entomological society of Ontario*, 25-29 September 1993, Sault Ste. Marie, Ontario, Canada). New York: Marcel Dekker, Inc.
- Anonymous. 1995. XXVIIth Eastern Canada Pesticide Residue & Environmental Contaminants Workshop & Symposium on Environmental Behaviour of Pesticides On Site Technical Program & Abstracts. Sault Ste. Marie Ontario, Canada, 25-27 May.
- Armstrong, J.A. 1981. ULV/CDA optimum spray droplet size for control of the eastern spruce budworm in Canada. *Outlook on Agriculture* 10(7):327-332.
- Armstrong, J.A. and C.A. Cook. 1993. Aerial spray applications on Canadian forests: 1945-1990. Information Report ST-X-2. Forestry Canada, Ottawa.
- Bontemps, X.P-M.B. 1983. The optimization of aerial spray atomizers. Department of Chemical Engineering, The University of New Brunswick, Fredericton, New Brunswick.
- Campbell, R.A. and C.A. Howard. 1993. Priorities for forestry herbicide application technology research. *Can. J. For. Res.* 23:2204-2212.

- Campbell, R.A. and C.A. Howard. 1994. Priorities for forestry insecticide application technology research. *Journal of Environmental Science and Health* B29(4):591-619.
- Carrow, J.R. (ed.). 1974. Aerial spraying operations against blackheaded budworm on Vancouver Island 1973. Information Report BC-X-101. Pacific Forest Research Centre, Victoria, B.C.
- Crabbe, R.S. 1975. Some environmental measurements of the vertical spread of pollutants from low-level sources. LTR-UA-28. National Research Council, Ottawa.
- Crabbe, R.S., S.J. Davie, L. Elias and M.K. Krzymien. 1982. Field study of effect of atmospheric stability on target deposition and effective swath widths for aerial forest sprays in New Brunswick, Part I. LTR-UA-61. National Research Council, Ottawa.
- Crabbe, R.S., L. Elias and S.J. Davie. 1983. Field study of effect of atmospheric stability on target deposition and effective swath widths for aerial forest sprays in New Brunswick, Part II. LTR-UA-65. National Research Council, Ottawa.
- Crabbe, R.S., M. McCooeye and L. Elias. 1984. Effect of atmospheric stability on wind drift in aerial forest spray trials. Neutral to stable conditions. LTR-UA-73. National Research Council, Ottawa.
- Crabbe, R.S. and M. McCooeye. 1990. Wind drift from ultra-low-volume aerial insecticide applications in stable and turbulent conditions. In *Proc.* ACAFA symposium and trade show Science session, 27-37. Winnipeg, Manitoba, 11 October.
- Cunningham, J.C. and K.W. Brown. 1992. Application of Foray 48B against gypsy moth in Simcoe District, Ontario in 1991. Forestry Canada, Forest Pest Management Institute, Sault Ste. Marie, Ontario.
- Deboo, R.F. (Chairman). 1990. Proceedings of the ACAFA symposium and trade show, Winnipeg, Manitoba, October 8-12, 1990. National Research Council Canada.

- Drouin, J.A. and D.S. Kusch. 1975. Pesticide field trials on shade and shelterbelt trees in Alberta and Saskatchewan, 1974. Information Report NOR-X-131. Northern Forest Research Centre, Edmonton, Alberta.
- Drouin, J.A. and D.S. Kusch. 1976. Pesticide field trials on shade and shelterbelt trees in Alberta, 1975. Information Report NOR-X-150. Northern Forest Research Centre, Edmonton, Alberta.
- Elias, L. 1987. Specification of most acceptable spray weather. In Proc. symposium on the aerial application of pesticides in forestry, 199-207. Ottawa, Canada, 20-22 October.
- Fast, P.G., Kettela, E.G. and C.J. Wiesner. 1984. *Bacillus thuringiensis* foliar deposition and efficacy against eastern spruce budworm Final report. Report Number: C/83/221. Research and Productivity Council, Fredericton, New Brunswick.
- Fast, P.G., E.G. Kettela, and C.J. Wiesner. 1985. Assessment of the influence of concentration and foliar deposition on the efficacy of *Bacillus thuringiensis*, 1984 field trial Final report. Report Number C/85/047. Research and Productivity Council, Fredericton, New Brunswick.
- Fast, P.G., E.G. Kettela, V.C. Steel, and C.J. Wiesner. 1986. Assessment of the efficacy of *Bacillus thuringiensis* against the spruce budworm. Report Number C/86/005. Research and Productivity Council, Fredericton, New Brunswick.
- Green, G.W. (ed.). 1987. Proceedings Symposium on the aerial application of pesticides in forestry. AFA-TN-18 and NRC No. 29197. National Research Council Canada and The Associate Committee on Agriculture and Forestry Aviation.
- Hill, B.D. and D.J. Inaba. 1989. Use of water-sensitive paper to monitor the deposition of aerially applied insecticides. *Journal of Economic Entomology* 82(3):974-980.

- Hurtig, H., S.L.W. Mann, W.W. Hopewell, and R. Gravells. 1956. A new technique for sampling and assessing aerial spray deposits. *Cananadian Journal of Agricultural Science* 36(2):81-94.
- Irving, H.J., E.G. Kettela, and J.J.C. Picot. 1990. Technology transfer an example. In *Proc. ACAFA symposium and trade show Science session*, 1-7. Winnipeg, Manitoba, 11 October.
- Ives, W.G.H., J.A. Muldrew, and R.M. Smith. 1982. Experimental aerial application of forest tent caterpillar baculovirus. Information Report NOR-X-240. Northern Forest Research Centre, Canadian Forestry Service, Environment Canada, Edmonton, Alberta.
- Jobin, L.J. and R. Desaulniers. 1981. Results of aerial spraying in 1972 and 1973 to control the eastern hemlock looper (*Lambdina fiscellaria fiscellaria (Guen.*)) on Anticosti Island. LAU-X-49E. Environment Canada, Canadian Forestry Service, Frederickton, New Brunswick.
- Kristmanson, D.D. and J.J.C. Picot. 1983. Dunphy drift trials 1982 Measurements of airborne drops and Kromekote card deposits at ground level; foliage simulator tests. Preliminary Report. University of New Brunswick, Department of Chemical Engineering, Fredericton, New Brunswick.
- Kristmanson, D.D. and J.J.C. Picot. 1984. Some experimental results from the 1983 Dunphy spray trials. Department of Chemical Engineering, University of New Brunswick, Fredericton, New Brunswick.
- Lambert, M.C. 1983. Evaluation of the sampling procedures and the deposit on the fir foliage. Division of Spraying Techniques and Aviation, Ministry for Energy and Resources.
- Lambert, M.C. 1985. Verification du depot des insecticides. Programme De Lutte 1984, Contre La Tordeuse Des Bourgeons, De L'Epinette. Ministere de l'Energie et des Ressources, Direction de la Conservation. (In French)

- Lambert, M.C. 1985. Effet du depot d'insecticide sur l'efficacite des traitements. Programme De Lutte 1985, Contre La Tordeuse Des Bourgeons, De L'Epinette. Ministere de l'Energie et des Ressources, Direction de la Conservation. (In French)
- Mahendrappa, M.K. 1976. Distribution of aerially applied fertilizer on the Nashwaak experimental watershed. Information Report M-X-62. Canadian Forestry Service, Department of the Environment, Maritimes Forest Research Centre, Fredericton, New Brunswick.
- Malik, N. and W.H. Vanden Born. 1986. Use of herbicides in forest management. Information Report NOR-X-282. Northern Forestry Centre, Canadian Forestry Service, Edmonton, Alberta.
- Marsters, G.F. (Chairman) and J. Barry (Summarizer). 1990. Papers presented at national research council, associate committee on agricultural and forestry aviation, ACAFA symposium and trade show, science session. Winnipeg, Manitoba, 11 October.
- McCooeye, M.A., R.S. Crabbe, R.E. Mickle, A. Robinson, E.B. Stimson, J.A. Arnold, and D.G. Alward. Undated. Strategy for reducing drift of aerially applied pesticides. National Research Council, Institute for Environmental Chemistry, Ottawa.
- Mickle, R.E. and R. Hoff. Undated. A comparison of spraying in parallel and cross winds. Atmospheric Environment Service, Downsview, Ontario.
- Mickle, R.E. and A.G. Robinson. Undated. A monitor for aerial spraying. Atmospheric Environment Service, Downsview, Ontario and Forest Pest Management Institute, Sault Ste. Marie, Ontario.
- Mickle, R.E., R. Crabbe, L. Elias, D. Kristmanson, J. Picot, J.D. Reid, B. Steeves, N.B.A. Trivett, and C. Wiesner. 1984. Assessment of the 1983 spray fate experiment at the Dunphy test site. Report No. NBSERG/84/1. New Brunswick Spray Efficacy Research Group, Research and Productivity Council, Fredericton, New Brunswick.

- Mickle, B., A. Morneault, J. Standard, and P. Robertson. 1994. Aerial herbicide spraying with a night vision system (Version 2.0). NVS Report: July 1994.
- Mickle, R.E. 1995. Effects of adjuvant formulation modifications on pesticide fate. Presented at the fourth international symposium on adjuvants for agrochemicals. Melbourne, Australia.
- Morris, O.N. 1980. Report of the 1979 CANUSA cooperative *Bacillus* thuringiensis B.T. spray trials. Report FPM-X-40. Forest Pest Management Institute, Canadian Forestry Service, Sault Ste. Marie, Ontario.
- Otvos, I.S. and S. Vanderveen. 1993. Environmental report and current status of *Bacillus thuringiensis* var. *Kurstaki* use for control of forest and agricultural insect pests. Ministry of Forests, Forestry Canada, Victoria, British Columbia.
- Payne, N.J., B.V. Helson, K.M.S. Sundaram, and R.A. Fleming. 1990. Estimating buffer zone widths for pesticide applications. In *Proc. ACAFA* symposium and trade show Science session, 15-25. Winnipeg, Manitoba, 11 October.
- Reynolds, P.E. (ed.). 1989. Proceedings of the Carnation Creek herbicide workshop, December 7-10, 1987. FRDA Report 063. Forest Pest Management Institute, Forestry Canada, Sault Ste. Marie, Ontario.
- Riley, C.M., M. McCooeye, R. Crabbe, R.E. Mickle, and J.J.C. Picot. 1992. Further studies on the effects of aircraft application parameters on deposit and drift of forestry herbicides Executive summary. Report Number C/92/443(a). Prepared for Ontario Forest Research Institute, Ontario Ministry of Natural Resources, Sault Ste. Marie, Ontario.
- Riley, C.M., C.J. Wiesner, D.W. Scott, J. Weatherby, and R.G. Downer. 1992. Evaluating the field efficacy of *Bacillus thuringiensis* Berliner against the western spruce budworm (Lepidoptera:Tortricidae). *Standard Technical Publication* 1112:271-290.

- Riley, C.M. and T. Smith. 1994. Droplet evaporation studies with biological pesticide formulations. Research and Productivity Council, Fredericton, New Brunswick.
- Riley, C.M., I.I. Sears, J.J.C. Picot, and T.J. Chapman. 1994. Description and validation of a test system to investigate the evaporation of spray droplets (DRAFT). In *Pesticide Formulations and Application Systems: 14th Volume, ASTM STP 1234*, eds. F.R. Hall, P.D. Berger, and H.M. Collins. Philadelphia: American Society for Testing and Materials.
- Salonius, P.O., C.C. Smith, H. Piene, and M.K. Mahendappa. 1977. Relationships between air and ground temperatures in spruce and fir forests. Information Report M-X-77. Canadian Forestry Service, Department of Fisheries and the Environment, Maritimes Forest Research Centre, Fredericton, New Brunswick.
- Sundaram, A., K.M.S. Sundaram, and J.W. Leung. 1991. Droplet spreading and penetration of non-aqueous pesticide formulations and spray diluents in Kromekote cards. *Transactions of the ASAE* 34(5):1941-1951.
- Sundaram, A. 1994. Drop-size spectra and deposits of four *Bacillus* thuringiensis formulations on simulated and natural fir foliage. *Transactions* of the ASAE 37(1):9-17.
- Sundaram, A. 1995. Factors affecting spray deposition, distribution, coverage, and persistence of biorational control agents in forest canopies. In: ACS Symposium Series 595: *Biorational Pest Control Agents Formulation and Delivery*, eds. Franklin R. Hall and John W. Barry, 108-133. Washington, DC: American Chemical Society.
- Templin, R.J. 1974. Note on the wind tunnel modelling of pesticide spray problems. LTR-LA-145. National Research Council, Ottawa.
- Thorne, G. 1990. Aircraft angle of attack system for Conair firecat and turbo firecat aircraft. In *Proc. ACAFA symposium and trade show Science session*, 9-14. Winnipeg, Manitoba, 11 October.

- Trial, J.G. (ed.). 1987. Buffer zones: Their application to forest insect control operations Proceedings of the buffer zone workshop sponsored by the Eastern Spruce Budworm Council's Environmental Committee. Quebec City, 16-17 April 1986. Forest Pest Management Institute, Canadian Forestry Service, Sault Ste. Marie, Ontario.
- Van Frankenhuyzen, K., C. Howard, J. Churcher, G. Howse, and D. Lawrence. Deposition and efficacy of Dipel 8AF applied diluted and undiluted against the gypsy moth (Lepidoptera: Lymantriidae) in southeastern Ontario. Information Report FPM-X-84. Forest Pest Management Institute, Forestry Canada, Sault Ste. Marie, Ontario.
- Varty, I.W. and M.E. Godin. 1983. Identification of some of the factors controlling aerial spray efficacy. Information Report M-X-142. Canadian Forestry Service, Department of the Environment, Maritimes Forest Research Centre, Fredericton, New Brunswick.
- Voisey, P.W. (Ed.). 1984. Proceedings: symposium on the future role of aviation in agriculture. AFA-TN-17, NRC No. 23504. National Research Council of Canada and the Associate Committee on Agricultural and Forestry Aviation.
- Wall, R.E. 1992. Field experiments in forest weed biocontrol. In proceedings of a workshop held at the western international forest disease work conference, 47-52. Vernon, British Columbia, 9 August 1991.
- Wall, R.E., R. Prasad, and S.F. Shamoun. 1992. The development and potential role of mycoherbicides for forestry. *The Forestry Chronicle* 68(6):736-741.
- Wickens, R.H. 1974. Aerodynamic research related to aerial spraying of pesticides. LTR-LA-170. National Research Council, Ottawa.
- Wickens, R.H. 1975. A technique for simulating the motion and ground effect of aircraft wake vortices With particular reference to the aerial spraying of pesticides. LTR-LA-186. National Research Council, Ottawa.

- Wickens, R.H. 1977. Aircraft wake vortices and their effects on aerial spray deposition. LTR-LA-219. National Research Council, Ottawa.
- Wiesner, C.J. 1981. Problem analysis and feasibility study for a New Brunswick spray efficacy programme. Technical Report 80/T/4. Report prepared by New Brunswick Research and Productivity Council for Forest Protection Limited, Fredericton, New Brunswick.
- Wiesner, C.J. 1982. Foliar deposition of spray droplets, Dunphy 1982. Report No. C/82/326. Prepared by Research and Productivity Council for Forest Protection Ltd., Fredericton, New Brunswick.
- Wiesner, C.J. 1984. Foliar deposition of spray droplets, Dunphy 1983. Report Number: C/83/242. Prepared by Research and Productivity Council for Forest Protection Ltd., Fredericton, New Brunswick.
- Wiesner, C.J., E.G. Kettela, and J.J.C. Picot. 1986. Evaluation of Dipel formulations, 1985. Report Number C/85/104. Research and Productivity Council, Fredericton, New Brunswick.
- Wiesner, C.J. 1988. Foliage deposit assessment sampling. Prepared by Research and Productivity Council for USDA Forest Service, Pacific Northwest Region, Portland, OR.
- Young, B.W. 1979. A review of the techniques available for determining spray droplet size from stain measurements; and potential problems in the derivation of the spread factor. Report Series TMJ 1719 A. ICI, Plant Protection Division.

MISCELLANEOUS REPORTS AND PAPERS

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## MISCELLANEOUS REPORTS AND PAPERS

- Almas, D., W. Bousfield, L. Livingston, and W. Ludeman. 1975. 1974 north Idaho cooperative douglas-fir tussock moth control project. Report No. 75-1. State of Idaho, Department of Lands, Division of Forest Management, Coeur d'Alene, ID.
- American Meteorological Society. 1989. 19th conference agricultural and forest meteorology and ninth conference biometeorology and aerobiology, March 7-10, Boston, MA.
- Anonymous. 1977. Atmospheric residues of 2,4-D in northeastern Oregon 1977. Prepared by Agricultural Chemistry, Oregon State University, Oregon State Department of Agriculture for Pacific Northwest Regional Commission.
- Anonymous. 1986. *Elements of Toxicology and Chemical Risk Assessment* (A handbook for nonscientists, attorneys and decision makers). Washington, DC: Environ Corp.
- Anonymous. 1990. Citizen's guide to pesticides. 20T-1003 (4th Edition). US Environmental Protection Agency, Washington, DC.
- Anonymous. 1991. EPA's pesticide programs. 21T-1005. US Environmental Protection Agency, Washington, DC.
- Anonymous. 1993. The worker protection standard for agricultural pesticides How to comply. EPA 735-B-93-001. US Environmental Protection Agency, Washington, DC.
- Anonymous. 1993. Abstract Book 14th Annual Meeting, Ecological Risk Assessment: Lessons Learned? 14-18 November 1993, Houston, TX. Pensacola, FL: SETAC.

- Anonymous. 1994. The consideration of inert ingredients in the risk assessment of pesticides. SERA TR-013-94-16. Prepared by Syracuse Environmental Research Associates, Inc. for USDA Animal and Plant Health Inspection Service (APHIS), Biotechnology, Biologics and Environmental Protection, Environmental Analysis and Documentation, Hyattsville, MD.
- Anonymous. 1994. Ecological risk assessment for the national gypsy moth management program. Prepared by USDA Animal and Plant Health Inspection Service, Environmental Analysis and Documentation, Biotechnology, Biologics, and Environmental Protection.
- Akesson, N.B. and J.W. Barry (Workshop Co-chairmen). 1978. *Proceedings Plant protection and pesticide accountancy workshop, forestry spray projects*. American Society of Agricultural Engineers Committees PM-41 and PM-55.
- Auburn University Silvicultural Herbicide Cooperative. 1994. 1994 annual report. Alabama Agricultural Experiment Station, School of Forestry, Auburn University, AL.
- Azar'yan, M.B., T.R. Borodina, et al. Undated. The application of aviation in agriculture and forestry (Part II of II). FTD-MT-24-101-68. Translation prepared by Translation Division, Foreign Technology Division, WP-AFB, Ohio.
- Bache, D.H. and S. Uk. 1975. Transport of aerial spray, II. Transport within a crop canopy. *Agricultural Meteorology* 15:371-377.
- Baker, D.E. and D.B. Smith. Undated. Personal protective equipment for working with pesticides. Science and Technology Guide. No. 1917. University of Missouri Columbia Extension Division, Columbia, MO.
- Balneaves, J., D. Hammond, M. Lane, J. Smith, A. Vanner, R. van Rossen, and J. Zabkiewicz (organizers). 1993. Weedworks '93, programme abstracts, list of participants, 19-23 April. New Zealand Forest Research Institute, Rotorua, NZ.

- Barry, J.W., R.B. Ekblad, G.P. Markin, and G.C. Trostle (Compilers). 1978. Methods for sampling and assessing deposits of insecticidal sprays released over forests. USDA Technical Bulletin Number 1596. Washington, DC.
- Bebee, C.N. (Compiler and ed.). 1991. The Protection of Lawn and Turf Grasses, 1979 April 1991: Citations from AGRICOLA concerning diseases and other environmental considerations. USDA-107. Beltsville, MD: National Agricultural Library.
- Bey, C.F., J.E. Krajicek, R.D. Williams, and R.E. Phares. Undated. Weed control in hardwood plantations, 69-84. In *Herbicides in Forestry*, 1975 proceedings of John S. Wright forestry conference, Purdue University, West Lafayette, IN.
- Biermann, H.W., J. Fleck, S. Powell, T. Younglove, and R. Gallavan. 1994. Evaluation of experimental procedures for the determination of spray characteristics of orchard sprayers. EH 94-05. State of California, Environmental Protection Agency, Department of Pesticide Regulation, Environmental Monitoring and Pest Management Branch, Sacramento, CA.
- Brazelton, R.W. and W.B. McHenry. 1980. How much chemical do you put in the tank? Leaflet 2718. Cooperative Extension, Division of Agricultural Sciences, University of California, Davis, CA.
- Brown, A.W.A. 1951. *Insect Control by Chemicals*. New York: John Wiley and Sons, Inc. London: Chapman & Hall, Limited.
- Buffam, P.E. and J.D. Buffam. 1988. Results of a test to evaluate the effectiveness of Foray 48B<sup>R</sup> against the western spruce budworm in Oregon in 1988. Pestechon, Inc., Lakeworth, FL.
- Burkett, Douglas (LT) and T. Biery (LT COL). 1991. Aerial application of pesticides, DOD Course AAP 001 Syllabus. Version 8.0. DOD, ARS, OH.
- Burt, E.C. and D.B. Smith. 1974. Effects of droplet sizes on deposition of ULV spray. *Journal of Economic Entomology* 67(6):751-754.

- Chiotakis, A.V. 1991. Bridgewater III spray characterization trials March 26-30, 1991. North Carolina Department of Agriculture, Raleigh, NC.
- Ciesla, W.M. 1993. Decline and mortality of *Acacia nilotica* in riverine forests of the Blue Nile. GCP/SUD/047/NET. Food and Agriculture Organization of the United Nations, Rome, Italy.
- Ciesla, W.M. 1993. Assessment of the dwarf mistletoe and other factors affecting the health of juniper forests in Baluchistan. PAK/88/071. Food and Agriculture Organization of the United Nations, Rome, Italy.
- Ciesla, W.M. 1994. Top dying of sundri, *Heritiera fomes* in the Sundarbans: An analysis of causal factors and management options. BGD/84/056. Food and Agriculture Organization of the United Nations, Rome, Italy.
- Ciesla, W.M., D.K. Mbugua, and J.G.D. Ward. 1994. Preliminary observations on dieback and mortality of *Juniperus procera* in Kenya. FO:DP/KEN/91/005, Field Document 6. Integrated Forest Pest Management Centre, Ministry of Environment and Natural Resources, Kenya and Food and Agriculture Organization of the United Nations, Rome, Italy.
- Ciesla, W.M. 1994. Assessment of the 1994 outbreak of nun moth, *Lymantria monacha*, in Poland and proposed pest management activities. FO 2/354. Food and Agriculture Organization of the United Nations, Rome, Italy.
- Conley, W.M. 1977. Aerosol application of ultra-low-volume sprays with heavy transport-type aircraft. Research Report No. 28. Air War College, Air University, US Air Force, Maxwell Air Force Base, AL.
- Cox, C. 1988. Using cards to monitor pesticide drift. The Journal of Pesticide Reform 7(4):24-25.
- Craig, I.P.S. and C.S. Parkin. 1992. Herbicide application using a fluid-driven rotary atomizer. *Tropical Pest Management* 38(2):164-166.

- Cromwell, R.P. 1975. Calibrating an aircraft for accurate chemical application. Extension Report 75-12. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, Department of Agricultural Engineering, University of Florida, Gainesville, FL.
- Dashevskiy, V.I., I.A. Trunov, and P.A. Zubov. 1974. Aerial super-low-volume spraying for protecting forests, 1-9. Ministry of Civil Aviation, Moscow. Translation NASA TT-F-16811 prepared by Transemantics, Inc. for National Aeronautics and Space Administration, Washington, DC.
- Davis, J.M. and K.R. Elliott. 1953. A rapid method for estimating aerial spray deposits. *Journal of Economic Entomology* 46(4):696-698.
- De Marrais, G.A., G.L. Downing, and H.E. Meyer. 1968. Transport and diffusion of an aerosolized insecticide in mountainous terrain. ESSA Research Laboratories Technical Memorandum ARL 6. U.S. Department of Commerce, Environmental Science Services Administration, Research Laboratories, Silver Spring, MD.
- Duan, B., K. Mierzejewski, and W.G. Yendol. 1992. A model for the prediction of the evaporation rate of pesticide droplets aerially sprayed from aircraft. *Journal of Environmental Science and Health* B27(6):677-694.
- Duan, B., W.G. Yendol, and K. Mierzejewski. 1992. Statistical comparison of the AGDISP model with deposit data. *Atmospheric Environment* 26A(9):1635-1642.
- Dumbauld, R.K., J.E. Rafferty, and J.R. Bjorklund. 1977. Prediction of spray behavior above and within a forest canopy. TR-77-308-01. Prepared under Contract No. 19-276 by H.E. Cramer Company, Inc. for USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.
- Fellin, D.G. 1983. Chemical insecticide vs the western spruce budworm: After three decades, what's the score? Western Wildlands 9(1):8-12.
- Fellin, D.G., R.C. Shearer, and C.E. Carlson. 1983. Western spruce budworm in the northern Rocky Mountains. Western Wildlands 9(1):2-7.

- Fertig, S.N., W.L. Hollis, G.W. Hanes, and K. Walton. 1994. Bibliography for application technology. USDA Agricultural Research Service, Stoneville, MS.
- Franz, J.R., D. Weaver, and R. Segawa. 1985. Monitoring of the 1984 gypsy moth eradication ground spray program in Alameda and San Diego counties. State of California, Division of Pest Management, Environmental Protection and Worker Safety, Unit of Environmental Monitoring and Pest Management, Sacramento, CA.
- Fredrickson, E.A. 1994. Efficiency of forest vegetation control with herbicides. A Thesis submitted to Oregon State University, Corvallis, OR.
- Fulton, R.A. 1957. A list of publications on liquefied-gas aerosols, 1933-1956. ARS-33-37. USDA Agricultural Research Service.
- Gardner, W.J. 1995. Bivert<sup>R</sup> outperforms polymer in spray drift trials. *Ag-Pilot International*, December, pp. 52, 54.
- Geyer, R., R. Fay, C. Giammona, K. Binkley, G. Denoux, and R. Jamail. 1992. Aerial dispersant application: Assessment of sampling methods and operational altitudes Volume I. Technical Report Series 93-009.1. Marine Spill Response Corporation, Washington, DC.
- Geyer, R., R. Fay, C. Giammona, K. Binkley, G. Denoux, and R. Jamail. 1992. Aerial dispersant application: Assessment of sampling methods and operational altitudes Volume II Appendices. Technical Report Series 93-009.2. Marine Spill Response Corporation, Washington, DC.
- Ghassemi, M., P. Painter, M. Powers, N.B. Akesson, and M. Dellarco. 1982. Estimating drift and exposure due to aerial application of insecticides in forests. In *Environmental Science & Technology*, ES&T 16(8):510-514.
- Giles, K. 1994. Agricultural sprays: Demands and accomplishments in precision spraying. Prepared for the 1994 ILASS conference. Department of Biological and Agricultural Engineering, University of California, Davis, CA.

- Glover, G.R. and S.M. Zedaker. 1993. An international perspective on environmental concerns and regulations affecting forest herbicide use. (Draft of a paper from an invited presentation at *weedworks*, Rotorua, New Zealand.) AUSHC Information Note 93-2. Silvicultural Herbicide Cooperative, Auburn University, AL.
- Goering, C.E., D.B. Smith, and L.E. Bode. 1978. Transport of agricultural pesticide sprays, 341-346. In *Proc. the 1st international conference on liquid atomization and spray systems, ICLAS '78*. Tokyo, Japan, 27-31 August.
- Grafton, E. and R. Webb. Undated. Homeowner's guide to gypsy moth management. West Virginia University, Extension Service, Morgantown, WV.
- Gravelle, P.J. 1978. A practical spray deposit card for aerial herbicide monitoring. Paper presented at the Western stand management committee of the western forestry and conservation association. Sacramento, CA.
- Haq, K.A. 1981. Statistical models on the effects of rheological properties on atomization from nozzles used for agricultural aircraft (Dissertation). University of California, Davis, CA.
- Harrison, T. and C.S. Parkin. 1989. Drop spectra produced by Micronair AU5000 atomiser, Beecomist atomiser and 8003 flat fan nozzle with Foray formulations. ICAP, Cranfield Institute of Technology, Bedford, England.
- Hilburn, D.J., K.J.R. Johnson, and A.D. Mudge (eds.). 1995. Proceedings of the 1994 annual gypsy moth review, Portland, OR, 30 October-2 November, 1994. Sponsored by the National Gypsy Moth Management Board, Oregon Department of Agriculture, USDA Forest Service, and USDA APHIS, PPQ.
- Holden, A.V. and D. Bevan (eds.). Undated. Control of Pine Beauty Moth by Fenitrothion in Scotland 1978. Edinburgh: Forestry Commission.

- Huddleston, E., R. Sanderson, S. Carlson, and N. Bledsoe. 1990. Characterization of the Air Force C-130 spray system for applying *Bacillus thuringiensis* formulations to control the gypsy moth. Final Report, Cooperative Agreement No. 42-588. Department of Entomology, Plant Pathology and Weed Science, New Mexico State University, Las Cruces, NM.
- Ignoffo, C.M., D.L. Hostetter, and D.B. Smith. 1976. Gustatory stimulant, sunlight protectant, evaporation retardant: Three characteristics of a microbial insecticidal adjuvant. *Journal of Economic Entomology* 69(2):207-210.
- Kershaw, D.J., P.D. Gadgil, J.W. Ray, J.B. van der Pas, and R.G. Blair. 1988. Assessment and control of *Dothistroma* needle blight. FRI Bulletin No. 18. Forest Research Institute, Ministry of Forestry, Private Bag, Rotorua, New Zealand.
- Klein, W.H. 1982. Understanding color infrared photography. Stephen F. Austin State University, School of Forestry, Center for Applied Studies, Nacogdoches, TX.
- Lieu, B.Y.H. and D.Y.H. Pui. 1982. Drop size measurement of liquid aerosols. *Atmospheric Environment* 16(3):563-567.
- Luttrell, R.G. and D.B. Smith. 1990. Effect of spray deposit characteristics on insecticide efficacy. In *Pesticide Formulations and Application Systems:* 10th Volume, ASTM STP 1078, eds. L.E. Bode, J.L. Hazen, and D.G. Chasin, 56-70. Philadelphia: American Society for Testing and Materials.
- MacLeod, G.F. (Program Leader). 1968. Proceedings of the western regional pesticide chemical application short courses. Conducted under a fund from the Federal Extension Service, administered by the University of California Agricultural Extension Service, Berkeley, CA and presented in conjunction with the Cooperative Extension Services of the thirteen western state universities.
- Mallory, L.P. 1975. Weather support for the 1974 tussock moth spray operation. National Weather Service, Western Region Headquarters, Salt Lake City, UT.

- Matthews, G.A. 1975. Determination of droplet size. PANS 21(2):213-225.
- Matthews, G.A. and E.C. Hislop (eds.). 1993. Application Technology for Crop Protection. Wallingford, Oxon, United Kingdom: CAB International.
- May, K.R. 1950. The measurement of airborne droplets by the magnesium oxide method. *Journal of Scientific Instruments* 27:128-130.
- McNabb, K. Undated. Forestry herbicide facts. Circular ANR-629. Alabama Cooperative Extension Service, Auburn University, AL.
- Mierzejewski, K., S. Maczuga, and W. McLane. 1993. Effect of different adjuvants on aqueous Dimilin 4L applied aerially under low humidity conditions. AATL 93-2. Pennsylvania State University, Aerial Application Technology Laboratory, Department of Entomology, University Park, PA.
- Mierzejewski, K. 1993. Aircraft tracking guidance & flight path recording in forest spray projects: An evaluation using two differentially corrected GPS-based systems. AATL 93-1. Pennsylvania State University, Aerial Application Technology Laboratory, Department of Entomology, University Park, PA.
- Mierzejewski, K., W.G. Yendol, W. McLane, M. Legendre, J. Ford, B. Tanner, T. Roland, and K. Ducharme. 1993. Study of off-site deposition of malathion using operational procedures for the southeastern cotton boll weevil eradication program. AATL 93-3. Pennsylvania State University, Aerial Application Technology Laboratory, Department of Entomology, University Park, PA.
- Mierzejewski, K., W. Buzzard, and G. Laudermilch. 1994. Operational use of differentially corrected GPS based aircraft tracking guidance & flight path recording systems in forest spray projects. AATL 94-1. Pennsylvania State University, Aerial Application Technology Laboratory, Department of Entomology, University Park, PA.

- Mierzejewski, K. 1995. Use of the FSCBG program to simulate off-target drift of aerially applied malathion in cotton crops. AATL 95-1. Pennsylvania State University, Aerial Application Technology Laboratory, Department of Entomology, University Park, PA.
- Mierzejewski, K., W. Buzzard, and G. Laudermilch. 1995. An evaluation of the SATLOC foreststar in the 1995 Pennsylvania forest insect pest suppression program. AATL 95-2. Aerial Application Technology Laboratory, Department of Entomology, Pennsylvania State University, University Park, PA.
- Miller, D.R., Y.S. Wang, H.W. Thistle, and J.D. Lin. 1989. In *Preprints* 19th conference agricultural and forest meteorology and ninth conference biometeorology and aerobiology, 180. Charleston, SC, 7-10 March.
- Miller, D.R., Y.S. Wang, D.E. Anderson, and H.W. Thistle. 1989. In *Preprints* 19th conference agricultural and forest meteorology and ninth conference biometeorology and aerobiology, 204-206. Charleston, SC, 7-10 March.
- Miller, J.H. and G.R. Glover (eds.). 1991. Standard methods for forest herbicide research. Southern Weed Science Society.
- Morgan, D.P. 1977. Recognition and management of pesticide poisonings. EPA-540/9-77-013. US Environmental Protection Agency, Office of Pesticide Programs, Washington, DC.
- Mudge, A.D. and K.J.R. Johnson. 1992. Gypsy moth detection, eradication, and exclusion programs in Oregon. Paper prepared for *National gypsy moth review*. Indianapolis, IN.
- Nabokov, V.A., A.I. Sadovnikov, and I.V. Uspenskiy. 1964. Using a helicopter for dusting forest sources of tick-borne encephalitis. *Medical Parasitology and Parasitic Diseases* 33(1), 64-68.
- National Research Council (Committee on Pesticides in the Diets of Infants and Children, Board on Agriculture and Board on Environmental Studies and Toxicology, Commission on Life Sciences). 1993. *Pesticides in the Diets of Infants and Children*. Washington, DC: National Academy Press.

- Newton, M. and E. Fredrickson. 1993. The relationship of volume, dose, surfactant and dropsize to herbicide efficiency (A management guide). Oregon State University, Corvallis, OR.
- New Zealand Forest Research Institute. 1993. Aerial spraying by computer. What's New in Forest Research No. 228, Rotorua, New Zealand.
- Norris, L.A. 1981. The movement, persistence, and fate of the phenoxy herbicides and TCDD in the forest. In *Residue Reviews*, 80:66-135.
- O'Neal, J. 1983. Physical characterization and droplet assessment of Matacil, Zectran and three biological insecticides Bactospeine, Dipel and Thuricide. Environmental Greenery, Neely, MS.
- Paramonov, A.Y. 1963. Aerial control of forest pests in the U.S.S.R. In *Issledovaniya i Materialy*, Series 1, No. 49:5-76. Translated from Russian, IPST Cat. No. 873, Office of Technical Services, US Department of Commerce, Washington, DC.
- Parkin, C.S. Undated. Factors affecting the movement of spray droplets above a forest canopy. International Centre for the Application of Pesticides, Cranfield Institute of Technology, U.K.
- Parkin, C.S. and H.A. Siddiqui. 1989. Measurement of drop spectra from rotary cage aerial atomizers. International Centre for the Application of Pesticides, Cranfield Institute of Technology, Bedford, UK.
- Parkin, C.S., L.O. Brun, and D.M. Suckling. 1992. Spray deposition in relation to endosulfan resistance in coffee berry boxer (*Hypothenemus hampei*) (Coleoptera: Scolytidae) in New Caledonia. *Crop Protection* 11:213-220.
- Pesticide Exposure to Children Committee. 1994. A joint review of existing federal and state pesticide registration and food safety programs. A report to the California Legislature. California EPA, Department of Pesticide Regulation, Sacramento, CA.

- Quackenbush, T.R. and M.E. Teske. 1993. A microcomputer model for assessing fuel jettisoning effects (Poster). In Abstract book 14th annual meeting Ecological risk assessment: Lessons learned? Society of environmental toxicology and chemistry, 193. Houston, TX, 14-18 November.
- Quackenbush, T.R., M.E. Teske, and C.E. Polymeropoulos. 1994. A model for assessing fuel jettisoning effects. *Atmospheric Environment* 28(16):2751-2759.
- Ramsey, C. 1994. The list of federal threatened and endangered plant species in the southern United States. Information Note 94-3. Silvicultural Herbicide Cooperative, Auburn University, GA.
- Ramsey, C. 1994. Abstracts related to forest herbicides. Information Note 94-4. Silvicultural Herbicide Cooperative, Auburn University, GA.
- Ramsey, C. 1995. Adjuvant and surfactant directory. Information Note 95-1. Silvicultural Herbicide Cooperative, School of Forestry, Auburn University, AL.
- Reed, W.H. Undated. An analytical study of the effect of airplane wake on the lateral dispersion of aerial sprays (Supercedes NACA TN3032, An analytical study of the effect of airplane wake on the lateral dispersion of aerial sprays 1953). Report 1196. National Advisory Committee for Aeronautics.
- Richardson, B. 1988. The role of droplet size, concentration, spray volume, and canopy architecture in herbicide application efficiency. A Thesis submitted to Oregon State University, Corvallis, OR.
- Richardson, B. 1993. Vegetation management practices in plantation forests of Australia and New Zealand. In *Can. J. For. Res.* 23:1989-2005.
- Richardson, B. 1993. Aerial application of herbicides in New Zealand forests. Project Record 3428. Forest Research Institute Ltd., Rotorua, New Zealand.
- Richardson, B. and J. Ray. 1993. Computer-aided aerial spraying in New Zealand. In *Proc. weedworks '93*. Rotorua, New Zealand, 19-23 April.

- Richardson, B., J. Ray, and A. Vanner. 1993. Quantification of herbicide spray deposit variation following aerial application in forestry operations, 319-324. In *Proc.* 46th New Zealand plant protection conference.
- Richardson, B., J. Ray, K. Miller, and A. Vanner. 1993. Quantification of herbicide spray deposit variation following aerial application in forestry. 32BRV1.DOC. New Zealand Forest Research Institute Limited, Rotorua, New Zealand.
- Richardson, B. 1994. Current developments in vegetation management and aerial pesticide application research in New Zealand. (Presentation to USDA Forest Service meeting, Montana, USA, 15 October 1994.) Forest Research Institute, Rotorua, New Zealand.
- Richardson, B. and J. Ray. 1994. Herbicides use and regulation in New Zealand's plantation forests. Paper presented at *USDA Forest Service national pesticide-use training*. Marana, AZ, 16-30 March.
- Sauter, G.D. 1976. A generic survey of air quality simulation models. In *Proc. of the conference on environmental modeling and simulation*, 30-34. Cincinnati, OH, 19-22 April.
- Schonherr, J. 1969. Field experiment for the biological control of the european fir budworm, *choristoneura murinana* (Hbn.) with granulose viruses. In *Entomophaga* 14(3):251-260. (Translation FTD-ID(RS)T-1343-78 prepared by Translation Division, Foreign Technology Division, WP-AFB, Ohio.)
- Schmidt, W.C., D.G. Fellin, and C.E. Carlson. 1983. Alternatives to chemical insecticides in budworm-susceptible forests. *Western Wildlands* 9(1):13-19.
- Scribner, W.A. Undated. Potlatch tussock moth control project, 1965. Report of Operations. State of Idaho Cooperative Board of Forest, Boise, ID.
- Smith, D.B. Undated. Drift of agricultural chemicals. USDA Agricultural Research Service, Columbia, MO.

- Smith, D.B. Undated. Drift of agricultural spray: Causes. Science and Technology Guide No. 1919, University of Missouri, Columbia Extension Division, Columbia, MO.
- Smith, D.B. and E.C. Burt. 1970. Effects of the size of ULV droplets on deposits within cotton foliage both inside and immediately downwind from a treated swath. *Journal of Economic Entomology* 63(5):1400-1405.
- Smith, D.B. and E.D. Threadgill. 1973. Compact device for sampling spray drift. *Transactions of the ASAE* 16(2):378-379.
- Smith, D.B., E.C. Burt, and E.P. Lloyd. 1975. Selection of optimum spray-droplet sizes for boll weevil and drift control. *Journal of Economic Entomology* 68(3):415-417.
- Smith, D.B., D.L. Hostetter, and C.M. Ignoffo. 1977. Laboratory performance specifications for a bacterial (*Bacillus thuringiensis*) and a viral (*Baculovirus heliothis*) insecticide. *Journal of Economic Entomology* 70(4):437-441.
- Smith, D.B., F.D. Harris, and C.E. Goering. 1979. Variables affecting the drift of agricultural spray--A progress report. V-3b-4. Paper prepared for the *IX CIGR congress*. East Lansing, MI.
- Smith, D.B. 1981. Application technology with microbial insecticides. Paper prepared for *First symposium on biological control in cotton*. Dallas, TX.
- Smith, D.B., F.D. Harris, C.E. Goering, and B.J. Butler. 1981. Equipment and variables for spray drift reduction. Paper prepared for *University of Florida*, pesticide application technology conference. Gainesville, FL.
- Smith, D.B. and D.L. Hostetter. 1985. Inner canopy deposits of microbial sprays in soybeans. *Journal of Entomology Science* 20(2):156-162.
- Smith, D.B. 1992. Uniformity and recovery of broadcast sprays using fan nozzles. *Transactions of the ASAE* 35(1):39-44.

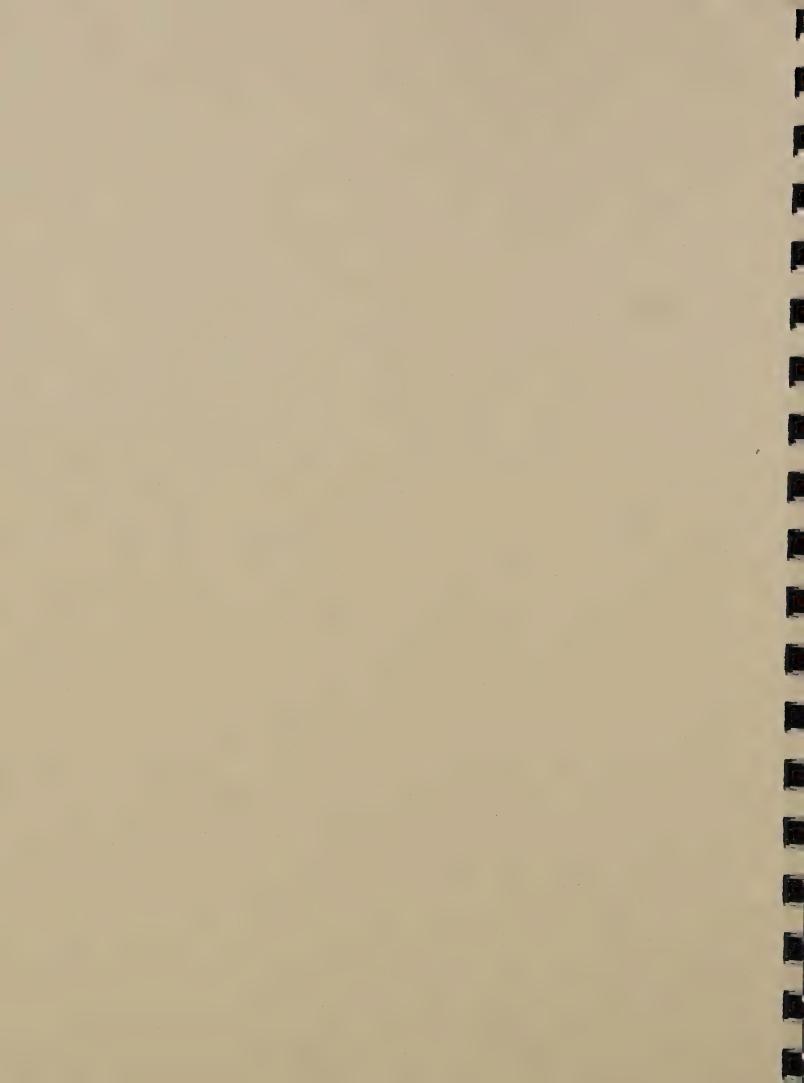
- Smith, D.B., M.H. Willcutt, D.L. Valcore, J.W. Barry, and M.E. Teske. 1993. Guidelines for aerial atomization and spray drift reduction for Mississippi applicators. Information Bulletin 251. Mississippi Agricultural & Forestry Experiment Station and Mississippi State University, Mississippi State, MS.
- Spillman, J. 1979. Future trends in agricultural aviation techniques or ignorance is not bliss just expensive. Paper presented at the 1979 convention of the aerial agricultural association of Australia. Perth, Australia.
- Spillman, J. 1988. A view of agricultural aircraft worldwide. *Cranfield Aerogram* 5(2):2-5.
- Start, G.E., C.R. Dickson, L.L. Wendell. 1973. Diffusion in a canyon within rough mountainous terrain. NOAA Technical Memorandum ERL ARL-38. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Research Laboratories, Air Resources Laboratories, Idaho Falls, ID.
- Steinke, W.E. and W.E. Yates. 1987. Modeling the behavior of a ULV adulticide application. In proc. *California mosquito and vector control association annual meeting*. Fresno, CA, 25-28 January.
- Steinke, W.E. 1989. Modelling the dispersion of pesticide aerosol in the atmosphere. Dissertation. University of California, Davis, CA.
- Steinke, W.E. and D.K. Giles. 1995. Delivery systems for biorational agents. In: ACS Symposium Series 595: *Biorational Pest Control Agents Formulation and Delivery*, eds. Franklin R. Hall and John W. Barry, 80-94. Washington, DC: American Chemical Society.
- Taylor, P.A. and R.S. Trayford. 1972. Calibration techniques for spray droplet sizing from surface impressions on sampling cards. Internal Report No. 112. Commonwealth Scientific and Industrial Research Organization, Division of Mechanical Engineering, Melbourne, Australia.

- Teske, M.E. 1991. DC-3 sensitivity study. C.D.I. Technical Note No. 91-06. Prepared by Continuum Dynamics, Inc. for USDA Forest Service, Morgantown, WV.
- Threadgill, E.D. and D.B. Smith. 1975. Effects of physical and meteorological parameters on the drift of controlled-size droplets. *Transactions of the ASAE* 18(1):51-56.
- Thistle, H.W., D.R. Miller, and J.D. Lin. 1989. Structure analysis of velocity time series near a forest edge. In *Preprints 19th conference agricultural and forest meteorology and ninth conference biometeorology and aerobiology*, 94-95. Charleston, SC, 7-10 March.
- Valcore, D.L. 1994. The spray drift task force: Progress in spray drift research and modeling. *Down to Earth* 49(2):31-35.
- Wang, Y.S., D.R. Miller, D.E. Anderson, H.W. Thistle, and J.D. Lin. 1989. In *Preprints 19th conference agricultural and forest meteorology and ninth conference biometeorology and aerobiology*, 181-183. Charleston, SC, 7-10 March.
- Ware, G.W. 1983. Reducing pesticide application drift-losses. Cooperative Extension Service, College of Agriculture, University of Arizona, Tucson, AZ.
- Waters, K.T. 1979. Identification of high payoff research for more efficient applicator helicopters in agriculture and forestry. NASA Contractor Report 152258. Prepared under contract by Boeing Vertol Company for National Aeronautics and Space Administration, Langley Research Center, Hampton, VA.
- Webb, R.O., E.D. Culver, and N.S. Laulainen. 1980. Calibration of special water sensitive paper including droplet impaction at oblique angles (technical note). *Atmospheric Environment* 14:385-389.
- Weiner, K.L. and C.S. Parkin. 1993. The use of computational fluid dynamic code for modelling spray from a mistblower. *Journal of Agricultural Engineering Research* 55:313-324.

- Whiteman, C.D. and K.J. Allwine. 1985. VALMET--A valley air pollution model Final report. PNL-4728 Rev. 1. Prepared for the U.S. Environmental Protection Agency under a Related Services Agreement with the US Department of Energy, Contract DE-AC06-76RL0 1830 by Pacific Northwest Laboratory (operated for the US Department of Energy) by Batelle Memorial Institute, Richland, WA.
- Whitford, F., D.T. Barber, D. Scott, C.R. Edwards, and J. Caravetta. Undated. Pesticides and the label. PPP-24. Purdue Pesticide Programs, Purdue University Cooperative Extension Service, West Lafayette, IN.
- Willcutt, M.H. and D.B. Smith. 1993. Improving the uniformity of ground-applied broadcast sprays. Publication 1697. Cooperative Extension Service, Mississippi State University.
- Wofford, J.T., R.G. Luttrell, and D.B. Smith. 1987. Relative effect of dosage, droplet size, deposit density, and droplet concentration on mortality of *Heliothis virescens* (Lepidoptera: Noctuidae) larvae treated with vegetable-oil and water sprays containing permethrin. *Journal of Economic Entomology* 80(2):460-464.
- Yates, W.E. and N.B. Akesson. 1979. Preliminary evaluation of an electronic guidance system for use in aerial spraying against the western spruce budworm. Final report CANUSA West Spruce Budworm Program. Prepared under Cooperative Agreement Number 57-PNW-78, CANUSA Western Spruce Budworm Program by University of California, Department of Agricultural Engineering, Davis, CA.
- Yates, W.E., R.E. Cowden, and N.B. Akesson. 1982. Procedure for determining in situ measurements of particle size distribution produced by agricultural aircraft, 335-339. In *Proc. 2nd international congress on liquid atomization and spray systems, ICLASS-82*. Madison, WI.
- Yates, W.E. 1984. Spectrum and atomization. Paper prepared for *Application technology workshop*. Bangor, Maine.

- Yates, W.E., W. Steinke, M. Sid Ahmed, and E.E. Kauffman. 1988. Prediction of spray deposit patterns and dispersion characteristics from aerial applications of *BTI*, 192-196. In *Proc. 56th annual conference of the California mosquito and vector control association, inc.* 28-31 January.
- Yeomans, A.H. 1949. Directions for determining particle size of aerosols and fine sprays. ET-267. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine.
- Yeomans, A.H. 1955. A method of determining particle size of liquefied-gas aerosols. ARS-33-5. USDA Agricultural Research Service.
- Zalom, F., J. Barry, W. Johnson, G. Kirfman, J. Conley, and J. Connell. 1994. Bloomtime aerial applications of *Bacillus thuringiensis* for control of peach twig borer. Presented at the *Second national integrated pest management symposium/workshop*. Las Vegas, NV.
- Zalom, F.G. (Project Leader). 1995. Annual report to the Almond Board of California, 1/23/95 94 C16 insect and mite research. University of California, Dept. of Entomology, Davis, CA.
- Zimdahl, R.L. 1991. Weed science A plea for thought. Department of Plant Pathology and Weed Science, Colorado State University, Ft. Collins, CO.

HISTORY



## **HISTORY**

- Anderson, M.I. History of ag aviation: Part I "Low and slow." 1981. World of Agricultural Aviation, November, pp. 18-24, 29, 30.
- Anderson, M.I. History of ag aviation: Part XIV "Low and slow." 1982. World of Agricultural Aviation, December, pp. 37-40.
- Anonymous. 1934. Spraying program and pest control for fruit crops. Bulletin No. 128 of the Agricultural Extension Service, the Ohio State University. Departments of the Botany, Entomology, and Horticulture of the Ohio State University and the Ohio Agricultural Experiment Station.
- Anonymous. 1945. Information on DDT experiments. Forest Insect Investigations Bi-Monthly Progress Report 1(6).
- Anonymous. 1946. Report on the Use of DDT in the control of forest insects. Forest Insect Investigations Bi-Monthly Progress Report 2(1).
- Anonymous. 1965. Aerial application of agricultural chemicals. Agricultural Handbook No. 287. USDA Agricultural Research Service, Washington, DC.
- Anonymous. 1966. Second northeast aerial applicator's conference. Ithaca, NY, 16-17 March. A regional project of the Northeastern Pesticide Coordinators in cooperation with the Federal Extension Service, USDA.
- Balch, R.E. 1953. Current practices and future trends in forest insect control. *The Forestry Chronicle* 29(1):6-13.
- Bergland, B. USDA policy on management of pest problems. 1977. Secretary's Memorandum. USDA, Office of the Secretary, Washington, DC.
- Brooks, F.A. 1947. The drifting of poisonous dusts applied by airplanes and land rigs. *Agricultural Engineering* 28(6):233-239, 244.

- Butler, C. 1995. Ford trimotor... sprayer, etc. Ag-Pilot International, December, pp. 18-20.
- Burbank, F.M. 1973. Civilian needs and case studies, 43-46. In *Proc. of the colloquium on technology transfer*. Washington, DC, 5-7 September.
- Coad, B.R. 1924. Dusting cotton from airplanes. Department Bulletin 1204. United States Department of Agriculture, Washington, D.C.
- Craighead, F.C. and R.C. Brown. 1946. Summary of 1945 DDT investigations for control of forest insects with special reference to aerial application. E-684. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, MD.
- Davis, J.M., D.A. Isler, B. Maksymiuk, and T.T. Terrell. 1957. The effect of spraying height on spruce budworm control using a B-18 airplane 1956 season. Special Report Bv 57-1. USDA Forest Service, Beltsville Forest Insect Laboratory, Beltsville, MD and the Intermountain Forest & Range Experiment Station, Ogden, UT.
- Dowden, P.B., D. Whittam, H.K. Townes, and N. Hotchkiss. 1945. DDT applied against certain forest insects in 1944, particularly with aerial equipment. E-663. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, MD.
- Evenden, J.C. and E.J. Jost. Undated. Tussock moth control, North Idaho, 1947. Potlatch Timber Protective Association, Idaho State Forestry Department, USDA Forest Service, and USDA Bureau of Entomology and Plant Quarantine.
- Fowler, R.F., L.F. Wilson, and D.M. Paananen. 1986. Insect suppression in eastern region national forests: 1930-1980. General Technical Report NC-103. USDA Forest Service, North Central Forest Experiment Station, St. Paul, MN.
- Glasgow, R.D. 1948. Application of insecticides Old and new methods. Industrial and Engineering Chemistry 40(4):675-679.

- Gooden, E.L. 1944. Size specifications for fine powders. *Journal of Economic Entomology* 37(2):204-208.
- Hamilton, C.C. 1937. Adherence and rate of settling of lead arsenate dusts. Journal of Economic Entomology 30(3):399-404.
- Hubbard, H. Undated. Notes on the history of biological spray projects, 1961-1977. USDA Forest Service, Northeast Station, Hamden, CT.
- Isler, D.A. 1958. Notes on some items involved in checking contract spray planes. USDA Forest Service, Division of Forest Insect Research, Beltsville, MD.
- Isler, D.A. and B. Maksymiuk. 1961. Some spray distribution and atomization tests with a helicopter. ARS 42-54. USDA Agricultural Research Service, Beltsville, MD.
- Isler, D.A. and J.S. Yuill. 1964. Spray distribution patterns from a Piper PA-18A airplane flying at 50 feet. ARS-42-88. USDA Agricultural Research Service, Beltsville, MD.
- Johannsen. O.A. 1913. Spruce bud worm and spruce leaf miners. Bulletin No. 210. University of Maine, Maine Agricultural Experiment Station, Orono, Maine.
- Jones, H.A., A.W. Lindquist, C.C. Deonier, and C.N. Husman. 1945. Dispersion of DDT sprays from fast combat aircraft. *Journal of Economic Entomology* 38(6):691-693.
- King, W.V. and G.H. Bradley. 1925. Airplane dusting in the control of malaria mosquitoes. *Aero Digest*, December, pp. 652-653, 688.
- King, W.V. and G.H. Bradley. 1926. Airplane dusting in the control of malaria mosquitoes. USDA Department Circular 367. Washington, DC.
- Kruse, C.W., A.D. Hess, and R.L. Metcalf. 1944. Airplane dusting for the control of *Anopheles quadrimaculatus* on impounded waters. *National Malaria Society Journal* 3(3):197-209

- Lewis, F.B. and D.P. Connoln. Undated. *Bt* pilot test Connecticut and New York 1966. Final Report. USDA Forest Service, Northeastern Forest Experiment Station, Hamden, CT.
- Macdonald, D.R. 1962. Studies of aerial spraying against the spruce budworm in New Brunswick. XVII. Mortality of fir and spruce in selected sprayed and unsprayed areas. Information Report. Canada Department of Forestry, Forest Entomology and Pathology Laboratory, Fredericton, N.B.
- McLintock, J. 1974. Strategy of insect control. From the President's address in the feature symposium *Entomology and the Environment*, 130-134. Halifax, Nova Scotia, 24 August.
- Miskus, R. 1972. An analysis of aerial application methods. Personal Notes. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
- Moore, A.D. 1965. Progress of insecticide evaluation research. In *Proc.* of the 1965 annual meeting of western forest pest committee. Vancouver, British Columbia, 8 December.
- Nagel, R.H. and J.S. Yuill. 1947. Field experiments with aerial sprays 1946 season. Progress Report. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Forest Insect Laboratory, Beltsville, MD.
- Orr, L.W. and N.D. Wygant. 1945. Experiments in the use of DDT and other insecticides for control of the spruce budworm in Colorado in 1944. E-669. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, MD.
- Paananen, D.M., R.F. Fowler, and L.F. Wilson. 1987. The aerial war against eastern region forest insects, 1921-86. *Journal of Forest History*, October, pp. 173-186.
- Pieper, G.R. and R.P. Miskus. 1967. Determination of Zectran residues in aerial forest spraying. Agricultural and Food Chemistry 15(5):915-916.

- Potts, S.F. 1946. Particle size of insecticides and its relation to application, distribution, and deposit. *Journal of Economic Entomology* 39(6):716-720.
- Potts, S.F. 1950. Control of Forest and Shade-tree Insects With Concentrated Sprays Applied By Mist Blowers. Tree Pest Leaflet No. 54. Hillsboro, NH: Committee on Tree Pest Leaflets, Society of American Foresters.
- Sanders, G.S. 1953. Equipment and procedures for the measurement of deposits of aerially applied materials. Research Bulletin 727. Ohio Agricultural Experiment Station, Wooster, OH.
- Sebora, L.H., C.C. Deonier, C.B. Wisecup, C.N. Husman, and O.M. Longcoy. 1946. Performance of aerial spray equipment used to disperse DDT at Orlando, Florida Summary. *Mosquito News* 6(4):169-177.
- Southwell, P.H. 1973. Progress in the technology of chemical applications by aircraft. ASAE Paper No. 72-652. St. Joseph, MI:ASAE.
- Speers, C.F. 1960. Pilot test to control the balsam woolly aphid on Mt. Mitchell by spraying. Progress Report. USDA Forest Service, Southeastern Forest Experiment Station, Asheville, NC.
- Stevens, R.E. 1956. Control of an infestation of the Douglas-fir tussock moth with DDT aerial spray Calaveras and Tuolumne Counties, California. USDA Forest Service, California Forest and Range Experiment Station, Berkeley, CA.
- Swaine, J.M. 1930. Airplane dusting for the control of forest insects in Canada. *Canadian Woodlands Review*, January, pp. 11-12, 30-32.
- Voss, C. and C.W. Moore. 1990. The Bell 47B-3 helicopter The first agricultural and utility model and the Argentina locust story.
- Webb, F.E. 1959. Studies of aerial spraying against the spruce budworm in New Brunswick. XIII. Operational summaries and assessment of immediate results 1958. Interim Report 1958-6. Canada Department of Agriculture, Research Branch, Forest Biology Division, Fredericton, NB.

- Webb, F.E. and D.G. Cameron. 1961. Studies of aerial spraying against the spruce budworm in New Brunswick. XVI. Cartographic history of egg-mass populations, 1948-1959. Interim Report 1959-5. Canada Department of Forestry, Forest Biology Division, Fredericton, NB.
- Yeomans, A.H. and E.E. Rogers. 1953. Factors influencing deposit of spray droplets. *Journal of Economic Entomology* 46(1):57-60.
- Yuill, J.S., D.E. Parker, and D. Gershowitz. 1946. Special report on application of sprays containing DDT by helicopter. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, MD.
- Yuill, J.S. and C.B. Eaton. 1951. Airplane spraying for forest pest control. E-823. USDA Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, MD.

